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SUMBUL RESIN.

By Philip H. Utech, Ph.G.

Contribution from the Chemical Laboratory of the Philadelphia College of Pharmacy. No. 128.

In the preparation of this resin 1,000 grams of the root were taken, and reduced to a coarse (No. 20) powder. It was then macerated, first in water, and subsequently in a solution of sodium carbonate, after which it was again washed with cold water, and allowed to dry at a temperature of 15° C.

During this operation the drug lost 42 per cent. of its weight, consisting largely of extractive matter, albuminoids, etc. A second portion was experimented on with approximately the same results.

The drug was then percolated with alcohol, and the resulting tincture agitated with lime and filtered. A little sulphuric acid was added to decompose the lime, and the tincture then agitated for some time in contact with animal charcoal, and again filtered.

The alcohol was recovered by distillation, and the residue poured into water. There was precipitated a soft, whitish, translucent resin, which on drying in an air bath at 110° C., yielded a clear, transparent, amber-colored product, having a bitter taste, and possessing the aromatic odor of the root. The yield was 6·1 per cent.

This resin was completely soluble in chloroform, ether, carbon disulphide, acetone, benzol and acetic ether; but only partly dissolved by petroleum ether, and 36 per cent. acetic acid. It was almost insoluble in solution of ammonia.

On igniting 4 grams of the resin on platinum, it burned with a sooty flame, and left 50 milligrams of ash.

Hydrochloric acid partly dissolved the resin and the mixture acquired a violet-blue color resembling "purple of Cassius," which, however, soon faded to a brown. Sulphuric acid completely dissolved the resin with the production of a thick blackish liquid, and on adding the solution to water the resin was reprecipitated. With nitric acid the resin imparted but a slight coloration to the liquid, although it assumed a dark, reddish color itself.

On adding 1 cc. of fuming nitric acid to 1 gram of the resin, a rapid oxidation occurred, attended with copious evolution of nitrous fumes, and left as a product of the oxidation, a brown, waxy substance which was readily soluble in alcohol. This alcoholic solution, when added to water and filtered, gave a lemon-yellow solution, which in its general behavior towards reagents, corresponded to picric acid.

The resin was but slightly soluble in solutions of potassium or sodium hydrate. An alcoholic solution of the resin was not affected by ferric chloride.

When fused with potassium hydrate, a brownish mass was formed, a portion of which was soluble in water, and the insoluble portion dissolved in glycerin on warming. On acidulating the aqueous solution with diluted sulphuric acid, agitating with ether, decanting the ethereal layer, and allowing the same to evaporate spontaneously, the residue, when dissolved in water, gave a clear colorless liquid, which decolorized an acid solution of potassium permanganate. It was further tested with solutions of ferric chloride, ferrous sulphate, and silver nitrate, but its identity with the di-acid phenols could not be established.

THE UNITED STATES PHARMACOPŒIA OF 1890.

By George M. Beringer, A.M., Ph.G.

The appearance of the seventh decennial revision of the Pharmacopœia of the United States has been patiently awaited by the pharmacists of America. The labors of the committee, extending over a period of more than three years, suggested the hope that the present revision would be perfect. The committee cannot be accused of hastily completing their work and the product, a book of over six hundred pages, gives evidence throughout of the desire to make this the most scientific of all the national pharmacopœias. The acknowledged talent of the gentlemen composing the commit-

tee of revision, assured in advance the scientific character of the work, but there is no lack of evidence of the want of that *practical* knowledge of the pharmacy of to-day acquired only by personal contact with customers.

That errors should have crept into a book of such vast scope and numerous titles is but natural, and the committee have added a final page of errata and addenda which they have discovered, but these are by no means all. After a careful examination of the book, the writer is forced to conclude that it is far from perfect and that the mistakes of the present revision will furnish ample work for the revision of 1900.

The typography of the work and binding are fair and the price at which the book is sold is satisfactory and should tend to make it much more popular than the previous revision of 1880. From January 1, 1894, it becomes the legal authority for all official products, and it is to be noted that *official* and not *officinal* has been stamped authoritatively by the committee.

The present review is offered from the unbiased standpoint of a practical pharmacist, whose daily companion the volume will be and it is supposed to be mainly prepared for the use of this class.

I would suggest that, in the future revisions, the proceedings of the convention authorizing that revision alone be published as the history of the earlier conventions and pharmacopœias can be obtained from the previous revisions. This would have eliminated ten pages from this edition. The book is replete with tables and lists as aids in the various calculations and testings, giving it much the appearance of a modern text book of chemistry. In this respect very little more could be desired, and some might have been here omitted as they will appear in the dispensatories and various compends. That most practical and often enquired after *Official table of doses* is omitted. In the writer's experience, this is quite as much needed by our medical brethren as by those of the pharmaceutical craft. In the table on page LVIII, we are informed that the strength of decoctions and infusions in the Pharmacopœia of 1890 is "about 1 in 5" instead of 1 in 20, or about five per cent. as in the text of the book. The Pharmacopœia of 1880, stated the weight of a fluidounce of water as 455·7 grains, that of 1890 states "456·392 grains at maximum density in vacuo," and this method is generally adopted in the tables. Scientifically accurate, but the pharmacist

needs these tables as aids to his commercial operations, which are not conducted in vacuo and rarely at the temperature of maximum density, and it would have been more to the purpose to have supplied him with tables of equivalent weights and measures computed for normal temperature and pressure instead of at 4° C. and in vacuo.

It is regretted that in the adoption of the Centigrade scale for temperatures that the equivalent in the Fahrenheit scale is added after each statement of temperature. The adoption of the metrical system of weights and measures is commendable and in harmony with scientific works over the entire globe. The system of parts by weight adopted by the Pharmacopœia of 1880 was regarded only as a compromise, a step in the education of the pharmaceutical and medical professions toward the universal adoption of the metrical system. With but few exceptions, such as making the dilute acids and mucilage of acacia, parts by weight have been dropped and the "un-American" idea of weighing liquids as a principle has been relegated to the past. If the pharmaceutical and medical writers will now refrain from transposing these weights and measures, they will compel the masses to think in the metrical system. This point attained, they will soon learn to understand and appreciate its usefulness.

Prior to, and at the time of, the convention in May, 1890, much had been written and said regarding standardization of the preparations of the organic drugs. After careful consideration, the committee have introduced methods of assay for cinchona and opium and for preparations of opium and nux vomica. We endorse the reasons assigned for such limitation on page XXX. The lime method for assay of opium, of the U. S. P. 1880, is discarded and Squibb's process is adopted, with the following slight modifications: Tared filters are not used. The crystals of morphine, after washing with water, are washed with alcohol saturated with morphine (it is apparent that at this part of the process the evaporation of the alcohol must be guarded against or a slight error will be introduced), subsequently washed with ether and dried at 60° C. and transferred to a tared watch crystal and weighed. No test is applied for the purity of the resulting morphine.

For the assay of cinchona, the process of 1880 was also discarded and a modification of Prollius' method for total alkaloids adopted. The product from the first extraction by a mixture of

alcohol, chloroform and ammonia is purified by conversion into sulphate. The filtered solution rendered alkaline by potassa, is extracted with chloroform. The evaporated chloroformic solution, dried and weighed gives the *total* alkaloids. For determining the percentage of quinine, the purified chloroformic solution, from 5 grm. of bark is evaporated on powdered glass and then extracted by slow percolation with ether until 10 cc. of percolate is obtained, this is evaporated and weighed. The percolation with ether is continued until another 10 cc. is obtained and this is likewise evaporated and weighed. The weight of the second deducted from the weight of the first portion and the result is assumed to give approximately the weight of quinine, and multiplied by twenty, the percentage.

For the assay of extract of nux vomica, the following process is adopted: 2 grm. of the extract dried at 100° C. is treated with a mixture of alcohol and water and water of ammonia and the alkaline liquid is extracted with chloroform. The chloroformic solution is evaporated and the residue extracted with 10 cc. $\frac{n}{10}$ sulphuric acid and hot water and then titrated with $\frac{n}{100}$ potassic hydrate solution using Brazil wood solution as an indicator. The number of cc. of the $\frac{n}{10}$ sulphuric acid found to have been neutralized by the alkaloid, multiplied by the factor 1·82, gives the percentage of the total alkaloid. A. H. Allen has recommended methyl orange as the indicator in strychnine titration. The process should direct *distilled* water, as the degree of hardness of natural water, would materially affect the results in such delicate determinations.

The descriptions of the official chemicals and many of the vegetable products, are accompanied by copious tests for identification and determination of purity and in this respect very little more could be desired, and in many cases the requirements are too stringent for medicinal chemicals.

Ninety-two articles have been dismissed from the Pharmacopœia. The list published on pages XLIX and L contains but ninety titles but we suppose that tinctura ferri acetatis and vinum aromaticum were dismissed and not inadvertently omitted. It is significant of the present tendency of medication towards the use of chemical remedies that of these, twenty-seven were of vegetable origin and but thirteen of chemical derivation, and of the latter æther, chloroformum venale and sodii bicarbonatis venale represent but titles as the purified products remain. The same may be said of the title

cinchona flava, dismissed as the title cinchona now includes the bark of cinchona calisaya, cinchona officinalis and of hybrids of these and other cinchonas. It is to be noted that the alkaloidal requirement for all official cinchonas has been increased to five per cent. total alkaloids which conforms with the *best* grades of cinchona now in the market. None of the vegetable drugs dismissed were sufficiently used to be retained, and the following should also have been excused from the official list as they would not be missed, cascarilla, chelidonium, illicum, melissa and sabina.

It is not a new proposition but a well-founded one, that the Pharmacopœia should not recognize any drug that is not prescribed in the crude state without introducing some official preparation of that drug. This would exclude caulophyllum, inula and marrubium of which fluid extracts should be official and staphisagria, pulsatilla and toxicodendron of which tinctures should have been introduced.

Inspissated ox-gall is the only drug of animal origin dismissed and this was unnecessary as the purified ox-gall answers all requirements.

Fifty-one preparations have been dismissed. The entire class of abstracts have been abstracted. This grand experiment of the Pharmacopœia of 1880, proved a most miserable failure. It must not be lost sight of, that those who are to use the Pharmacopœia, are practical medical practitioners and pharmacists and that their desires and needs must be supplied and not theories and experiments offered in their stead. They want powdered extracts and will prescribe them and use them daily and hourly. The Committee knows this, yet, with the exceptions of extract of opium and extract of nux vomica, this demand has been unheeded. The consumption of dry or powdered extracts of aconite, belladonna, cannabis, colchicum, conium, gentian, hyoscyamus, stramonium, etc., is enormous. Was the working out of formulas for these too non-scientific, too practical to engage the attention of the Committee? Manufacturers would most likely have furnished the necessary information.

Acetum lobeliæ and acetum sanguinariæ both excellent preparations for exhibiting the action of their respective drugs, having become neglected by the medical fraternity, are dismissed. The dismissing of infusion of kousso, was surely an error. The action of this drug is admittedly largely mechanical and the Pharmacopœia

of 1880, directed rightly that this infusion should be dispensed unstrained. It is now dismissed and the almost unused and probably inert fluid extract retained. Liquor pepsini has been dismissed, nor has any liquid preparation of this remedy been introduced, although several are greatly used.

Mistura Magnesia et Asafœtidæ has been dropped. Dewee's Carminative is again relegated to its proper position along with Godfrey's cordial, Bateman's drops, British oil and the other semi-proprietary remedies of the past generations.

I cannot refrain from noting here that the Mistura Potassii Citratis, 1880, has been dismissed. Under Liquor Potassii Citratis, Mistura Potassii Citratis is given as a synonym. That Mistura Potassii Citratis, 1880, is superior to Liquor Potassii Citratis, is beyond dispute, and both physicians and pharmacists have been taught to discriminate in favor of the former. The reason for such change is not apparent, as disuse cannot be urged and the Pharmacopœia cannot be presumed to endorse that substitution of the solution for the mixture, that has been indulged in by some mean-spirited druggists. I would suggest that physicians desiring Mistura Potassi Citratis made with lemon juice, should in future write Mistura Neutralis, which synonym, fortunately, remains unconfiscated, and that pharmacists recognize this intent.

Eighty-eight titles compose the list of additions to the Pharmacopœia. But three drugs are of animal origin, namely, Adeps Lanæ Hydrosus (the official name for what is generally known by the proprietary name Lanolin), Pancreatin and Pepsin. It is significant that thirty-four of these additions are of chemical origin and but thirteen of vegetable, while thirty-eight are preparations of which fourteen are fluid extracts.

The chemicals introduced are, as a rule, those whose use warrant recognition. The old notation has been discarded in the chemical formulas, it was already obsolete when introduced in 1880.

Surprisingly few are the changes in the titles of chemicals. Arsenious acid is now *arsenous*, and the titles of the official arsenical products changed in spelling to correspond. The Committee have deemed the changes in the spelling and pronunciation of chemical terms proposed by the American Association for the Advance of Science[1] too radical, and have contented themselves with such minor

[1] See American Journal of Pharmacy, 1893, 178.

changes as placing the metallic or basylous radical first in the English names, as sodium chloride instead of chloride of sodium, and in using the terminations *ous* and *ic* in the salts of mercury and iron to denominate the atomicity of the basic element in combination. Would it not have been more in accordance with established ideas to have written sodic chloride, potassic nitrate, plumbic carbonate, etc.? Surely, the titles of alkaloidal salts should have been changed, so as in each case to indicate the true composition. Cocaine hydrochloride, morphine hydrochloride, and hyoscine hydrobromide are correct names and such a change would have been endorsed.

The following are among the few vegetable drugs introduced, Quebracho bark, Convallaria rhizome and rootlets, Yerba Santa and Cascara Sagrada. It is generally admitted that the action of cascara is modified and improved by keeping for one year after collection. This is officially required for Frangula, but has been overlooked for Cascara. Barbadoes Aloes is reintroduced and Strophanthus and Viburnum Opulus are deserved additions, and under the title of Zea, corn silk is introduced.

Saigon Cinnamon has been admitted, but it is to be noted that it is not directed to be used in a single formula; each formula carefully specifying either Cassia Cinnamon or Ceylon Cinnamon to be used. It is well known that the bulk of the powdered cinnamon sold in the drug trade is saigon, and that this is used to prepare pharmaceutical preparations of fine quality. Its use should have been sanctioned officially, at least, where cassia is ordered, otherwise there is no reason for its introduction.

Notable changes in titles are Cusso for Brayera, Coca for Erythroxylon, Oleum Bergamottæ for Oleum Bergamii. A number of the changes made are not indicated by the titles. Amylum is now corn-starch and not wheat-starch, as heretofore. Long-leaved buchu is no longer recognized. Calendula is rightly florets only and Euonymus, bark of Root. Colchici Radix, on page 96, is stated to be "the *corm* of Colchicum autumnale, L.," now a corm is recognized as part of the *stem system* and not of the root, so the title should be Colchici Cormus.

Granatum is the bark of both the stem and root of Punica Granatum, L., in accordance with what has been in commerce for years. Grindelia includes both species, robusta and squarrosa. In the Phar-

macopœia of 1880, a curious mistake was made regarding Witch-hazel. Under the title of Hamamelis, the leaves were introduced and a formula for a fluid extract thereof. True, the so-called distilled extract or water had been made from the freshly-gathered twigs and leaves, but under the official title of the drug, the dispensatories described the medicinal action of the bark. The writer knows that the bulk of the fluid extract, made up to that time, and even since, has been made from the bark. In the report of the Committee on Pharmacopœia of the Philadelphia College of Pharmacy, which was presented to the Convention in 1890, it was recommended that the bark be admitted into the Pharmacopœia and that a fluid extract of the same be also introduced. Yet the present revision continues this error.

Oil of Anise, from Anisum, is alone recognized under that title, the description being such as to exclude the oil from Illicium. Although the oil from anisum has, in recent years, been produced in very much larger quantities than formerly and at greatly reduced prices, the bulk of the oil consumed is still that obtained from the star anise.

Our Western pulsatilla from Anemone patens L. var., Nuttalliana, *Gray*, is no longer recognized, Pilocarpus includes both the Rio Janeiro and the Pernambuco Jaborandis. In the botanical classification of the plants it is to be noted that sub-orders are not given and that several of the natural orders given in the U. S. P. 1880 have been reduced from their ordinal standing, so that plants previously classified as natural order Zingiberaceæ are suppressed into Scitamineæ, Granataceæ into Lythrarieæ, Erythroxylaceæ into Lineæ, Melanthaceæ into Liliaceæ, and Aurantiaceæ into Rutaceæ.

[*To be continued.*]

THE VALUE OF TITRATION WITH VOLUMETRIC ACID SOLUTION AS A MEANS OF ASSAYING ALKALOIDAL DRUGS AND GALENICAL PREPARATIONS.

By Charles Caspari, Jr., Ph.G., and Alfred R. L. Dohme, A.B., Ph.D.

Read at the meeting of the American Pharmaceutical Association.

Some time since one of us (C.) made mention[1] of the fact that a series of investigations was in course of progress upon the subject

[1] Caspari, "A Few Remarks about Alkaloidal Assays of Drugs," Pharmaceutical Review, Vol. I, page 211.

of titration of alkaloidal residues from assays by means of volumetric acid solution. After considerable delay the work has been about completed by both of us, each working separately. As long as drugs have been assayed it has been customary to weigh the residue obtained by evaporating the final extract of the alkaloids by ether, chloroform or some other solvent, and to call it alkaloid. This is frequently accompanied by the statement that the alkaloids are or are not perfectly pure. How pure they are the sequel will very plainly show. Beckurts, Schweissinger and all the German pharmaceutical chemists have adopted titration with volumetric acid solution as the most accurate method that we at present have for assaying alkaloidal drugs, and there need be no reason why we should not adopt it, especially if the results of experience show how much nearer the truth we will be than when we used the gravimetric method alone. That this method is without blemish we do not claim; in fact, we are candid to say there are two questionable elements which enter into the problem, though only in one or two instances, and give rise to some doubts as to the absolute correctness of our results in these instances. Even allowing that an error has been introduced, and calculating this at its maximum, we find that the result obtained by the titration method is nearer the truth than the result obtained by the gravimetric method. The two elements that enter the problem and cause us to hesitate ere saying "correct," in the cases of nux vomica, ipecac, cinchona, aconite and gelsemium, are: First, our imperfect knowledge of the molecular weights, or rather of the formulas, of some of the alkaloids, as, for instance, emetine, gelsimine, aconitine, etc., and second, the fact that some drugs (nux vomica and cinchona notably), contain several alkaloids possessing different molecular weights, and this compels us to assume that they are present in certain proportions in order to get the molecular weight from which to determine our percentage of alkaloids present. The first difficulty cannot be obviated until more exact analyses and formulas are forthcoming, and confronts us but seldom. The second difficulty can only be obviated by determining in each case by a separate assay just how much of each alkaloid is present. This presents itself in five cases, nux vomica, jaborandi, veratrum viride, cinchona and aconite. When we consider what great strides nearer to the truth we have taken in case of the remaining alkaloids (see the results below), and that we have in their cases results which

we know to be absolutely correct, it is our opinion that the method of titration with volumetric acid solution is by far the most reliable method we possess to-day for assaying alkaloidal drugs. In all cases we used the fluid extracts of the drugs examined. Some trouble was experienced in getting an indicator that would give a sharp end reaction in case of slightly-colored solutions, but a decoction of Brazil wood containing a little alcohol was found to answer all purposes. Our plan of procedure was as follows:

Four separate and distinct methods of assay were undertaken in case of each fluid extract examined, and the amount of error in each determined by means of titration with volumetric acid solution. The methods adopted were those of Lyons, Lloyd, Beckurts and Thompson. By employing these, as prescribed in their method, we obtained the usual gravimetric results given in the columns below, headed "gravimetric." The residues were then dissolved in a known quantity of decinormal hydrochloric acid dropped into the beaker from a graduated burette, using a little heat by placing it on a water-bath, if the alkaloids resisted solution due to the presence of resin, gum or other impurities. After cooling, the indicator was added, about 10 or 12 drops, and the excess of acid determined by means of a volumetric alkali solution, whose relation to the decinormal acid solution we know; the alkali solution being added until the solution became cardinal to purplish red in color, indicating an excess of alkali. The number of cubic centimeters of alkali solution used were then, after being converted into their equivalent of decinormal acid solution, subtracted from the original amount of decinormal acid solution added. This gave the amount of decinormal acid that had been used to neutralize the alkaloids present in order to form with them their hydrochlorides. We know that for every 36·37 grammes of hydrochloric acid used there must be present an amount of alkaloid equivalent in grammes to its molecular weight, provided the alkaloid is a monacid base. If it is a diacid base, as in case of ipecac, where emetine is known to be diacid, then 36·37 grammes of hydrochloric acid will neutralize, *i. e.*, indicate only one-half of the molecular weight, in grammes, of the alkaloid. To show the exact method employed in calculating the results recorded below, we will take the cases of belladonna root, nux vomica and ipecac root. The molecular weights of the three mydriatic alkaloids contained in belladonna root being all alike, we do not hesitate to represent it by

289. Those of the two alkaloids of nux vomica, strychnine and brucine, are respectively 334 and 394, and as we assume in this case that the two alkaloids are present in equal amounts, it follows that the molecular weight to be used in our calculations is the mean of 334 and 394, or 364. The molecular weight of emetine, the only alkaloid, at least non-volatile alkaloid, of ipecac root, is generally admitted to be 496, as the analyses made by Glenard[1] of the crystallized pure specimen of the hydrochloride of emetine yielded him figures, which when converted into a formula, gave $C_{30}H_{44}N_2O_4.2HCl$. We thus see that $C_{30}H_{44}N_2O_4 (= 496)$ or one molecule of emetine requires 2 HCl to neutralize it, therefore it requires only $\frac{496}{2}$ or 248 grammes of emetine to neutralize 1 HCl, *i.e.*, 36·37 grammes of HCl. Our next calculation is to determine to how much alkaloid in grammes is one cubic centimeter of our decinormal hydrochloric acid solution equivalent? We proceed as follows:

1000 cc. of normal hydrochloric acid contain 36·37 grammes of HCl.
1 cc. " " " 0·03637 " "
1 cc. of decinormal " " " 0·003637 " "

But

36·37 grammes of HCl will neutralize and are hence equivalent to . . . . . { 364 grammes of nux vomica alkaloids. 248 grammes of emetine. 289 grammes of mydriatic alkaloids.

Hence

1,000 cc. of normal HCl are equivalent to . . . . . { 364 grammes of nux vomica alkaloids. 248 grammes of emetine. 289 grammes of mydriatic alkaloids.

Or

1 cc. of decinormal HCl is equivalent to . . . . . { 0·0364 grammes of nux vomica alkaloids. 0·0248 grammes of emetine. 0·0289 grammes of mydriatic alkaloids.

In this way we know the equivalent of 1 cc. of decinormal hydrochloric acid for every alkaloid or mixture of alkaloids, and can readily, from the number of cubic centimeters of acid used, calculate the amount of alkaloid present, and hence also the percentage of alkaloids.

The following tabular statement of results will show the relative gravimetric inaccuracies for each alkaloidal drug investigated by us in case of each method, and also the relative merits of the various methods investigated.

[1] See Beilstein, "Handbuch der Organischen Chemie," II edition, Vol. III, p. 539; also Husemann-Hilger, "Die Pflanzenstoffe," Vol. II, p. 1363.

Fluid Extract.	Gravimetric.				Volumetric.			
	Method of Lyons.	Method of Lloyd.	Method of Beckurts.	Method of Thompson.	Method of Lyons.	Method of Lloyd.	Method of Beckurts.	Method of Thompson.
Aconite Root, . .	0·311*	0·446	1·947	0·640	0·128	0·437	0·517	0·599
Belladonna Leaves,	0·300	0·428	1·445	0·380	0·289	0·315	0·339	0·318
Belladonna Root,	0·338	0·318	1·135	0·424	0·338	0·309	0·348	0·335
Bloodroot, ...	1·232	1·560	—	—	†	†	—	—
Cinchona, ...	3·41	3·49	—	4·70	3·21	3·20	—	4·40
Coca Leaves, . .	0·969	0·806	—	0·680	0·563	0·533	—	—
Colchicum Seed, .	0·682	0·600	—	—	†	†	—	—
Conium Fruit, . .	0·567	0·699	—	—	‡	‡	—	—
Gelsemium, . . .	2·190	0·836	1·920	0·400	0·285	0·277	0·408	0·392
Henbane, ...	0·265	0·306	—	—	0·231	0·254	—	—
			Keller.				Keller.	
Ipecac, ...	1·815	1·478	2·01	2·90	1·570	1·465	1·51	0·93
Jaborandi, ...	0·443	0·884	—	0·510	0·166	0·249	—	0·266
			Beckurts.				Beckurts.	
Nux Vomica, . .	1·776	1·789	3·005	1·584	1·419	1·419	1·32	1·340
Stramonium Seed,	0·966	0·318	1·058	0·296	0·289	0·218	0·192	0·295
Veratrum Viride, .	0·832	1·030	—	—	0·246	0·328	—	—

* These figures all represent the percentage of alkaloids in the fluid extract, which in every case was taken from the same bottle for all the methods. The fluid extracts were of various makes.

† Alkaloidal residues were too deeply colored to admit of being titrated.

‡ Not titrated because of the volatility of the coniine, it having been weighed as hydrochloride.

CONCLUSIONS.

The conclusions to be drawn from these results have virtually been given in the text above. Summed up briefly they are:

(1) That titration with volumetric acid solution is the most reliable and trustworthy method of assaying alkaloidal drugs known to us to-day.

(2) That gravimetric results as heretofore generally reported and made use of are in many cases very wide of the truth, and hence unreliable.

(3) That some of the methods employed are better adapted to some drugs than to others, a perusal of the figures best showing this.

Inasmuch as several of these methods have never to our knowledge been applied to some of the fluid extracts examined, it might be of some value to mention here some of the modifications and changes made in them. The following table will, we hope, make this clear.

Fluid Extract.	Method of Lyons.	Method of Lloyd.+	Method of Thompson.△	Method of Beckurts.△△
Aconite Root,	See Lyons Manual, § 92.	Chlorof. ether.		
Bellad. Leaves,	" " § 120.	—		
Bellad. Root, .	" " § 120.	—		
Bloodroot, . .	. . . . . *	Ether alone.		
Cinchona, . .	" " § 127.	Chlorof. ether.		
Coca Leaves, .	" " § 154.**	" "		
Colchicum Seed	" " § 173.	" " ⊙		
Conium Fruit,	" " § 188.†	" " ‖		
Gelsemium, . .	" " § 207.	" "		
Henbane, . .	" " § 120.	—		
Ipecac, ...	" " § 29.	—		
Jaborandi, . .	" " § 120.	— ⊙⊙		
Nux Vomica, .	" " § 261.	—		
Stramon. Seed,	" " § 120.	—		
Veratr. Viride,	" " § 120.¶	— ‖‖		

+ Wherever there is a dash the regular method of Prof. Lloyd using his dried soda ferric hydrate mixture and plain chloroform has been employed. The chloroform ether mixture consisted of equal parts of each.

* Evaporate F. E. Bloodroot with HCl and water to remove all the alcohol. Precipitate with ammonia and filter. Dissolve precipitate in dilute HCl and filter again. Make alkaline and extract with ether.

** A mixture of {Benzine 70 / Ether 25} was used instead of benzine alone.

† Instead of titrating with sodium phosphomolybdate solution as given in § 188 we made alkaline with potassium carbonate and extracted with benzine and evaporated in tared beaker after adding a few drops of dilute hydrochloric acid.

¶ We used dilute acetic instead of sulphuric acid.

⊙ The chloroform ether extract was allowed to evaporate spontaneously after adding some dil. HCl. Filtered and washed with dilute HCl and extracted with ammoniated benzene-coloroform.

‖ Proceeded as under ⊙ but extracted with chloroform ether finally, making extract slightly acid by means of decinormal hydrochloric acid and heated to 100° C. weighing as coniine hydrochloride.

⊙⊙ Proceeded as under ⊙ using chloroform ether for final extracting—allowed this to evaporate spontaneously and when dry heated to 100° and weighed.

‖‖ Chloroform extract is evaporated at moderate heat on water-bath; dilute acetic acid is then added and some ether to insure combination of alkaloid with acid. After evaporating the ether, filter, wash, and then make alkaline with ammonia and extract with chloroform. Evaporate at moderate heat and finally at 100° C.

△ Thompson's Method—see Proceedings of the Michigan State Pharmaceutical Association, 1891, p. 67.

△△ Beckurts' Method—see Pharmaceutische Rundschau, Vol. IX, p. 255 (November, 1891).

BALTIMORE, *June 28, 1893.*

THE RELATIVE ALKALOIDAL VALUE OF THE VARIOUS PARTS OF THE PLANTOF DATURA STRAMONIUM.

By Alfred R. L. Dohme, Ph.D.

The original intention when this subject was taken up, was to extend its scope so as to embrace all of the principal narcotic herbs, viz.: hyoscyamus niger, atropa belladonna, duboisia myoporoides and datura stramonium, and to examine the drugs both in the dry and the fresh condition as to their content of alkaloids. Unfortunately this could not be carried out, as not all of the parts of each of the plants could be obtained, and many of these that did arrive from Europe in the green state had been spoiled during transit and were worthless. But little work has been done recently on this subject, and as far as the writer knows no work has been published that bears the stamp of a titration examination on it. Guenther,[1] in 1869, obtained the following results as the outcome of an examination of Atropa Belladonna and Datura Stramonium using only fresh, undried plants:

	Per Cent. Alkaloids Gravimetrically.
Leaves of Atropa Belladonna,	0·2
Stems " " "	0·042
Seed " " "	0·335
Ripe fruit of " "	0·21
Unripe " " "	0·196
Roots " " "	0·062
Leaves of Datura Stramonium,	0·076
Stems " " "	0·018
Seed " " "	0·255
Roots " " "	0·024

In the light of modern experience these results appear rather abnormal and it seems difficult to account for the very small yield of alkaloids from belladonna root and stramonium leaves, as well as the small yield from belladonna leaves as compared with the large yield from belladonna seed and stramonium seed.

Lefort attempted to discover a relation between the yield of the drug and the stage of its growth at which it was gathered. He found:

	Per Cent. Alkaloids Gravimetrically.
Belladonna Leaves, gathered in August, to contain,	0·45
" " " May "	0·40
" Roots, 2 to 3 years old, "	0·475
" " 7 to 8 " "	0·30

[1] Guenther—Pharmaceutische Zeitschrift für Russland, February, 1869.

These results approximate the results of to-day much nearer than those of Guenther and are probably nearer the truth. Trommsdorff could obtain only 0·002–0·02 per cent. of alkaloids from Stramonium Seed and E. Schmidt only 0·05–0·06 per cent.

Dragendorff by the application of his volumetric method[1] (using a vigintinormal solution of mercurio-potassium iodide[2]), obtained the following results:

	Per Cent. Alkaloids.
Belladonna Leaves yielded,	0·66
" Roots "	0·40
Stramonium Leaves "	0·612
" Seed "	0·380

The writer's experience in assaying narcotic herbs has been that Dragendorff's method or any other method that employs a solution of mercurio-potassium iodide is unreliable. Some assays given below and made at various times during the course of two years by various gravimetric methods[3] and Dragendorff's method show this quite plainly. In case of those results opposite one another, marked with an asterisk, the same drug was used in both methods so as to enable direct comparisons to be made:

Belladonna Leaves.		Belladonna Root.	
Gravimetric method without titration.	Dragendorff's volumetric method.	Gravimetric method without titration.	Dragendorff's volumetric method.
Per cent. alkaloids.	Per cent. alkaloids.	Per cent. alkaloids.	Per cent. alkaloids.
0·40*	0·75*	0·26*	0·46*
0·38	0·64	0·54*	0·74*
0·42	0·56	0·49*	0·83*
0·34*	0·51*		
	0·81		
	0·45		

[1] Dragendorff's method—Manual Pharmaceutical Assaying (Lyons), § 91, p. 48.

[2] Mayer's solution.

[3] Lyons method—Manual Pharmaceutical Assaying, § 29, p. 20, and Dunstan and Ransom's method—Manual Pharmaceutical Assaying, § 112, p. 56.

Henbane Leaves.		Stramonium Leaves.	
Gravimetric method without titration.	Dragendorff's volumetric method.	Gravimetric method without titration.	Dragendorff's volumetric method.
Per cent.	Per cent.	Per cent.	Per cent.
0·166*	0·25*	0·42	0·64
0·177	0·20	0·36*	0·59*
0·160	0·22		

It appears questionable whether the figures of Guenther, Lefort, etc., are absolutely reliable in face of the fact that they did not titrate their results, especially since titration with volumetric acid solution has been admitted here and in Europe to be the most reliable means of correctly assaying alkaloidal drugs. The following figures were obtained from a series of assays of the various parts of the plant Datura Stramonium, viz: leaves, stems, seeds and roots. The plants were gathered in the vicinity of Baltimore, where they grow wild during the months of July and August. The parts of the plants were separated while still green, some being cut up and assayed at once undried, the rest, however, were carefully dried, powdered and assayed about a week after they were gathered. The stems, roots and leaves marked "a" and "b" were all taken from the same plants, which too were gathered in July, but the seed were older and were taken from a lot whose origin was not known. The parts marked "c" were gathered in August, part being assayed in the fresh green state, part being used to determine the amount of moisture[1] in order to be able to compare the percentages in the dry and moist conditions directly, part finally being used for drying and being then assayed in the form of a dry fine powder. Those parts that were assayed in the green or fresh condition are marked "green" in the table below. The methods of assay used were the method of Lyons[2] for the determinations marked "a," and that of Dragendorff[3] for those marked "b" and "c." Dragendorff's method

[1] The percentage of moisture varies from seventy-five to eighty-five per cent.

[2] Lyons—Manual of Pharmaceutical Assaying (Lyons), § 29, p. 20.

[3] Dragendorff—Manual of Pharmaceutical Assaying (Lyons), § 91, p. 48.

was modified so as to be used as a gravimetric process and differed from Lyons merely in the use of dilute alcohol and tartaric acid in the place of Prollius' Fluid. It gave better results than Lyons. See below:

Part of plant used.	Gravimetric percentage.	Percentage by titration of former.
Leaves of Datura Stramonium (a), . .	0·654	0·214
" " " (b), . .	0·554	0·231
" " " (c), . .	1·420	0·231
" " " green (c), . .	1·420	0·271
Stems " " (a), . .	0·770	0·306
" " " (b), . .	1·060	0·358
" " " (c), . .	0·931	0·439
" " " green (c), . .	1·000	0·467
Roots " " (a), . .	0·496	0·138
" " " (b), . .	0·790	0·173
Seeds " " (a), . .	0·556	0·248
" " " (b), . .	0·596	0·289

It would seem from these figures that the stems of Datura Stramonium are richer in alkaloid than any other part of the plant. Next in percentage are the seed, then the leaves and finally the roots. It is also evident that some slight loss occurs during the process of drying. A similar investigation of the leaves, stems, roots and seed of the plant Hyoscyamus Niger has been made, the plants having been gathered in June and imported from Hungary for that purpose. The result was to show that the stems and seed contained little or no alkaloid while the roots contained 0·017 per cent., which is so small that for all practical purposes it may be regarded as none. The residue in the case of the stems and seed did not neutralize any volumetric acid solution, although there was a slight gravimetric residue, from which it is inferred there is either no alkaloid present or alkaloid which possesses no alkaline reaction. The leaves yielded 0·173 per cent. alkaloids by titration. Schoonbrodt has found that henbane leaves gathered in June yield less than those gathered at other times, and also that seeds gathered in June yield no alkaloid.

BALTIMORE, August 29, 1893.

THE RELATION OF SPECIFIC GRAVITY TO ATOMIC WEIGHT.

By A. N. Dorrschuk.

Read before the Missouri State Pharmaceutical Association.

Since the study of Chemistry by beginners and amateurs is so often hampered by apparently logical theories and conclusions which seem perfectly correct to the undeveloped eye, which has not been associated with the fundamental truths and underlying principles of this acute science, and, since views obtained from these theories and conclusions often cost much labor, time and many ungrounded misgivings, we ask your most worthy attention for a few moments while we explain one of these theories which so often worry the beginner in Chemistry, and for which very few if any satisfactory explanations are given.

The problem generally presents itself in this shape:

"Why is the sp. gr. of Iron (7·84), to the sp. gr. of aluminium (2·56) not proportionate to the atomic weight of iron (55·9) to the atomic weight of aluminium (27)?" Or "Why is the sp. gr. of iron to the sp. gr. of aluminium not proportionate to the molecular weight of iron to the molecular weight of aluminium?" Or "Why is it that the sp. gr. of a body, in a proportion to the sp. gr. of water, or (1), is not the same as the proportion formed by the molecular weight of that body and the molecular weight of water or (18)?" To get a clear idea of this matter, we must first know that the sp. gr. of a body is a "purely nominal value" and is "the relative weight of equal bulks of different bodies." From observation we know that a material difference exists in the "bulk or volume" of the same weights of different bodies, while the molecular weights of these bodies are nearly the same; therefore, density is as great a factor in determining the sp. gr. of a body, as is the intrinsic value of the element or elements contained in that body compared to a standard of weight. Physical research has taught that molecules are never in absolute contact; in fact, the density of a substance is entirely dependent upon molecular affinity and the pressure and heat to which it is subjected. Let us take, for instance, a body the sp. gr. of which is ·5, sp. volume 2, and its bulk twice as great as that of an equal weight of water. Now, if in the space between the molecules of this body we would place the same number of molecules of the same construction as are in the body, then its sp. gr.

would be increased to 1, and its sp. volume reduced to 1; and if from the same body we would take one-half of the molecules and leave the remaining half to fill the same space as was occupied by the original body, then its sp. gr. would be reduced to ·25 and its sp. volume increased to 4. So we see that specific gravity is purely a mutable signification, entirely dependent upon the intrinsic value of matter compared to a standard of weight, and upon density which is regulated by molecular affinity, gravity, atmospheric pressure and heat.

It is clear that a proportion of the atomic weights of two different bodies could not be in ratio with the sp. gravities of these bodies, because atoms of different elements unite in different numbers to form molecules, and the atomic weights of different elements are taken at different temperatures, while sp. gr. is always taken at the same temperature.

The impossibility of the molecular proportion is due to the fact that molecular weight is a constant quantity, being derived with all the elements from the same basis and under *similar* conditions, while specific gravity is a variable quantity, being derived with all the elements under *different* conditions, upon the same basis, and, as the same thing differently treated, does not yield the same result, so the specific gravity and molecular or atomic weight of the same substance, differently derived, cannot be expected to be proportionate in any way.

THE CHEMISTRY OF IPECACUANHA.[1]

DR. B. H. PAUL AND A. J. COWNLEY.

Next to opium and cinchona bark, ipecacuanha is probably one of the most important drugs included in the official materia medica, but its chemical history is still very imperfect, and although some of its medicinal effects are ascribed to an alkaloid, there is considerable doubt whether that is always the case.

For several months past we have been engaged in the endeavor to devise a satisfactory method of extracting from ipecacuanha the alkaloid which has been regarded as the active principle of this drug, and to which the name of emetine has been applied; our object being to obtain such means of quantitative determination as

[1] From Pharm. Jour. Trans., July 22, 1893, p. 61.

could be relied upon when applied to the examination of different samples of the commercial drug or of its medicinal preparations. In prosecuting this inquiry reference has, of course, been made to the observations of previous experimenters; but instead of deriving much assistance from the published statements of their results, we have found that they lead to considerable uncertainty respecting the chemical identity of the substance. Thus, for instance, in the description of emetine given by Lefort,[1] it is stated to be very readily soluble in solutions of caustic soda or potash, and that in such solutions emetine rapidly undergoes alteration by absorbing oxygen from the atmosphere. We have found that this is not the case with the alkaloid supplied by Merck as pure emetine, or with that which we have ourselves obtained from ipecacuanha. Even on precipitating the base from solutions of its salts with caustic alkalies the precipitate formed is not dissolved again on adding an excess of caustic alkali. There are similar discrepancies between the statements as to the physical characters of the alkaloid of ipecacuanha. Most authorities describe it as being perfectly amorphous, some state that it is susceptible of crystallization, under certain conditions, while others again describe it, without any qualification, as having the form of "needles"[2] or "crystals."[3] The statements as to the melting point of the alkaloid also differ considerably. In addition to these discordant statements, we have found, in experimenting with several samples of ipecacuanha, that the alkaloid is not homogeneous, but a mixture of two or more different substances.

Under these circumstances it appeared to be premature to attempt the determination of emetine, as a means of ascertaining the relative value of samples of ipecacuanha or of its medicinal preparations, and we have therefore directed our attention to the general chemical examination of the alkaloid constituents of the drug, as a necessary preliminary to the endeavor to devise some practically applicable method of valuation. This inquiry is not yet sufficiently advanced for the publication of the results as a whole; but some points which have been made out, are of sufficient interest to be worth mention in anticipation of a more complete account.

From the examination of a number of different samples of ipeca-

[1] Am. Journ. Pharm., 1869, 307.
[2] Watts' "Dictionary," ii, 431.
[3] Thorpe's "Dictionary," iii, 916.

cuanha we have ascertained that the alkaloid existing in this drug is for the most part a perfectly amorphous substance, of marked alkalinity, forming definite neutral salts which are also amorphous, and, like the base they contain, uncrystallizable by any means we have been able to apply. Hence it would appear that the want of a simple method of obtaining crystallized emetine is likely to remain a constant quantity, and that, in point of fact, the determination of emetine is at the present time only approximately possible, inasmuch as the substance is unknown.

Further, we have found that this amorphous alkaloid is associated with others which are distinctly crystalline and very different from the amorphous alkaloid in physical characters. This fact we have established beyond doubt, and we are of opinion that it will serve to account for some of the discordant statements which have been made in regard to the alkaloid of ipecacuanha. Thus, for instance, it is stated by Kunz,[1] as well as Lefort and Wurtz,[2] and Podwissotzki,[3] that although the substance described by them as emetine was generally amorphous, they sometimes obtained the alkaloid in the form of distinctly crystalline needles, by rapid evaporation of an ether solution. On several occasions we have observed a similar formation of very delicate silky crystals when the ether solution of the alkaloid from ipecacuanha was left for some time. Sometimes the formation of these crystals took place in such a manner that the ether solution appeared to become quite solid; but on recrystallization from ether the apparently solid mass could be separated into an amorphous portion and a crystalline substance that was much less soluble and, in proportion as it was purified, was found to have a melting point of 90° to 98° C., which is very much higher than that given for emetine by any observer. Consequently the desideratum of crystallization, assumed to be necessary for the determination of emetine, would not, if it were attainable, suffice for that purpose, since other alkaloids are present which would still have to be separated in order to obtain definite results.

The crystalline alkaloid above referred to is very much less soluble in ether, chloroform, or benzine than the amorphous alkaloid with which it is associated; but, as is usual in such cases, it is

[1] Archiv der Pharmacie [3], xxv, 465.
[2] Am. Jour. Pharm., 1877, 460.
[3] Am. Jour. Pharm., 1880, p. 206.

not until separation has been carried to some considerable extent that this difference becomes apparent. The quantity of material disposed of in the operations of fractional crystallization or precipitation, requisite for separating the alkaloids, is so great that very little remains for further examination unless larger quantities are operated with than we have yet had at our disposal.

The stem of Brazilian ipecacuanha appears to contain a small amount of the same amorphous alkaloid that is present in the root; but it is accompanied by a distinctly crystalline alkaloid. It is very sparingly soluble in ether, but separates from the solution on slow evaporation in lemon-yellow transparent crystals melting above 100° C. When precipitated from the solution of a salt by ammonia, it rapidly assumes a crystalline form, and on addition of caustic soda it is dissolved in the manner stated by Lefort (see *supra*). It forms a neutral hydrochloride which is amorphous, and the platinum salt appears to be readily decomposed.

This alkaloid is present in very much larger proportion, relatively to the amorphous alkaloid, than it is in the root. Consequently it follows that determinations of the amount of alkaloid, as a whole, in the stem will not correctly express the relations of stem and root in regard to the amount of emetine. Evidently no inference can be drawn from such determinations as to the relative values of those portions of the plant as medicinal agents. Before that can be done with any degree of certainty it will be necessary to find means of separating the alkaloids so that their several amounts may be ascertained, and to do that a knowledge of their characters must be obtained. With that object in view we are now engaged in preparing such quantities of the several alkaloids of ipecacuanha as will admit of their chemical characters being studied, so as to furnish data for their separation and identification, besides furnishing material for ascertaining their repective therapeutic effects. Meanwhile, however, it must be pointed out that, apart from the absence of official recognition, there is no ground whatever for the assumption that ipecacuanha stems possess properties which justify the admixture with the roots. So far as anything is known it points in the opposite direction.

Another point to which attention is being directed is the question as to the relative value of other kinds of ipecacuanha, such as, for instance, that of New Granada, which is said to be probably derived

from a plant different from that which yields Brazilian ipecacuanha. This Carthagena root is stated to be equal to, if not better than, the Brazilian at the present time.[1] That opinion is based upon the amount of alkaloid that has been obtained from the Carthagena ipecacuanha, and in regard to that point we have found that there is little or no difference between the two kinds. It has been assumed that the alkaloid present in this root is the same as that contained in Brazilian ipecacuanha. There is no distinct chemical evidence that such is the case; but in the course of our experiments relating to this subject we have at least obtained evidence that Carthagena ipecacuanha contains, in addition to a considerable amount of amorphous alkaloid, some proportion of another crystallizable alkaloid, which presents marked differences from the crystalline alkaloid of Brazilian ipecacuanha. Until the investigation of this material, in regard to the chemistry of its constituents and the therapeutic effects they produce, has been thoroughly carried out, and it shall have been shown that they are identical with those of the Brazilian drug, it would, however, be unjustifiable to advocate the substitution of the one for the other upon the ground of possible similarity of origin or of apparently analogous medicinal characters.

Before concluding it may be useful to refer to some of the opinions which have been expressed in regard to the striking absence of agreement between the data obtained in determinations of the alkaloid in ipecacuanha. Upon the basis of those data very dissimilar opinions have been expressed as to the amount of emetine in the drug. While some have taken one per cent. as the maximum others have taken 1·6 as the minimum for a sample of good quality, and others again have insisted that nothing should be recognized as good which does not contain at least 2·5 per cent. Placing side by side with these differences the different experimental data obtained by various operators, which run through all possible gradations between one and upwards of three per cent., it is evident either that ipecacuanha root is a very variable drug, or that the experimental results must have been largely influenced by accidental circumstances. The methods adopted by different operators are generally supposed to be chiefly accountable for the differences in the results obtained, and the facts we have already

[1] *Ph. J.* [3], xxiii, 267, and Keller, *Ph. J.* [3], xxiii, 592.

established as to the existence of distinct alkaloids, in regard to which some solvents exercise a differentiating action, will perhaps help to account for some of the differences between experimental results previously obtained.

There are, however, other conditions the probable influence of which upon the analytical results may be traced. It has been assumed that emetine is destroyed by the action of heat, and hence the recommendation of the cold extraction and evaporation at low temperatures. We have not found either of these precautions to be essential or of importance. The solvents used for extraction or to be evaporated in concentrating solutions, generally resemble ether in being of such a nature that no excessive heating need be feared in either of those operations. It is rather in the operation of "shaking out" that loss of alkaloid is likely to be caused, not by its destruction, but as a consequence of particles of the precipitated alkaloid being melted and thus rendered practically insoluble. The fact that the alkaloid becomes almost insoluble after being melted has been pointed out by Kunz, and as its melting point is so low there is great risk of loss in this way if the precipitation is too rapidly carried out. The assumed decomposing action of alkalies has been spoken of as causing low results; but that explanation is inconsistent with the fact, mentioned by Kunz, that emetine offers remarkable resistance to the action of alkalies. Altogether we are disposed to think that in the determination of alkaloid in ipecacuanha differences in experimental results are not due to the nature of the solvent employed for extraction or to the method of operating. It seems much more probable that such differences arise from the want of preserving, throughout the entire treatment, conditions which are suited to the characters of the material operated upon and of the substance to be obtained from it. This appears to be of much greater importance than strict adherence to a mere rule of thumb procedure.

	Total Mixed Alkaloids.	
No.	Root.	Stem.
1,	2·02	—
2,	1·95	—
3,	2·14	—
4, picked,	2·12	—
5, "	—	0·97
6,	2·08	—
7,	2·03	—

No.	Total Mixed Alkaloids. Root.	Stem.
8, picked,	2·28	—
9, "	—	1·76
10,	2·22	—
11, picked,	—	1·02
Mean,	2·11	1·25

So far as we are in a position to form an opinion on the point above referred to, from the analytical examination of a comparatively small number of samples of ipecacuanha, we are inclined to the conclusion that the percentage amount of alkaloid in ipecacuanha root does not vary very much from 2 per cent., as shown by the results given in the foregoing table.

The picked samples consisted entirely of either root or stem respectively. The other samples of root were operated upon without separating any admixture of stem that might be present; but it was not in any case sufficient to affect the result very materially. Two of the samples of stem were carefully picked to separate any particles of root; but the other sample, No. 9, was found, after the analysis had been completed, to contain a considerable admixture of portions of root bark, and that circumstance probably accounts for the higher amount of alkaloid obtained in that instance.

GLEANINGS FROM THE GERMAN JOURNALS.

By Frank X. Moerk, Ph.G.

Benzoin-alumina cotton a substitute for the ferric chloride cotton, is recommended by Giulio Morpurgo as a hæmostatic preparation, because it is efficient and at the same time does not stain the containers. It is made by boiling the solution of aluminum acetate with benzoin, straining, and at once impregnating the cotton. The prepared cotton is white and has a very pleasant odor; a considerable quantity of finely divided benzoin is separated upon the fibres, assisting by a mechanical action the astringent properties of the alumina.—*Pharm. Post*, 1893, 357.

Test for sugar in urine.—Several years ago Ihl observed that methylene blue in aqueous alkaline solution was decolorized by a number of carbohydrates, including dextrose, lævulose, lactose, invert sugar, dextrin, etc.; Herzfeld and Wohl later determined

invert sugar in cane sugar by this test. Dr. N. Wender, studying the test to ascertain its applicability to the examination of urine, found that a number of urine constituents were capable of decolorizing strongly alkaline methylene blue solutions. By proper dilution of the urine this source of error was remedied, and the test then is of sufficient accuracy to warrant its recommendation. 5–10 cc. urine are diluted with nine volumes of distilled water; 1 cc. of the diluted urine, 1 cc. of an aqueous methylene blue solution (this solution is permanent and contains one gram pure color in a liter), 1 cc. normal potassium hydrate solution and 2 cc. distilled water are heated and retained at the boiling point for about one minute; if the original urine contained 0·5 per cent. or more of dextrose the blue color will be discharged, otherwise the urine should not be pronounced diabetic. The decolorized test upon cooling separates methylene white, and by exposure to air this gradually absorbs oxygen and reproduces the blue color. From quantitative experiments made with glucose, it was determined that to decolorize one molecule methylene blue one molecule of dextrose was required, so that one milligram of pure color (equivalent to 1 cc. of the solution), requires 0·5 milligram of dextrose. A number of experiments with normal urine established that one mg. methylene blue was decolorized by about 4·5 cc. of the diluted urine (1 + 9) indicating in normal urine a quantity of reducing substances equivalent to 0·11 per cent. dextrose. After ascertaining that the urine is diabetic, it is possible to approximately estimate the dextrose by diluting with 49, 99 or 199 volumes of water, accordingly as the specific gravity is found in one of the three groups, 1·017–1·025, 1·025–1·030, 1·030–1·038; by a series of trials is next determined the exact quantity of the diluted urine necessary to decolorize one cc. of the methylene blue solution; the formula $\frac{0{\cdot}05\ v}{c}$ (v representing the dilution of the urine 50, 100 or 200, and c the number of cc. of the diluted urine necessary for decolorization), gives at once the percentage of dextrose in the original urine.—*Pharm. Post*, 1893, 393–397.

Lanolin.—E. Dieterich, in the Helfenberger Annalen, 1893 (through *Pharm. Post*, 1893, 426), publishes the observation that lanolin is capable of becoming rancid; a decolorized and purified sample in 1886 had the acidity figure of 0·84; after six and a half years' keep-

ing in a cork-stoppered salt mouthed bottle, it had become decidedly rancid, with the acidity figure 17·36; the cork was bleached and quite soft.

Oleo-creasote, the ester of oleic acid and creasote is a yellow, oily liquid, having a faint odor of creasote but free from the caustic taste of creasote; it is insoluble in water, alcohol and glycerin, but easily soluble in absolute alcohol and ether. Being a neutral body, daily doses of 10–15 grams can be administered without interfering with the functions of the stomach. It can be made by allowing 74·4 gm. pure creasote and 109·2 gm. pure oleic acid to stand for several hours before heating in an oil-bath to 135° C. for 1½ hours; the product is then repeatedly washed with distilled water, next with a dilute soda solution and lastly again with distilled water; to remove the last traces of water it is agitated with anhydrous sodium sulphate. The yield is rather unsatisfactory, as only about fifty per cent. of the theoretical quantity is obtained.—C. Levy, *Journ. der Pharm. v. Els.-Lothr.*, 1893, 249.

Easily soluble quinine double-salts, according to an application for a German patent, can be made by either dissolving quinine sulphate in diluted hydrochloric acid and evaporating in vacuo, or by passing hydrochloric acid gas over quinine sulphate previously dried at 100° C., displacing the excess of acid vapors by a current of air and finally drying in vacuo in the presence of potash. The salt has the formula, $(C_{20}H_{24}N_2O_2)_2\ 2\ HCl\ H_2SO_4 + 3\ H_2O$. It crystallizes in needle-shaped masses, loses its water of crystallization between 100° and 108°, is very easily soluble, the anhydrous salt dissolving in an equal weight of cold water. Instead of quinine sulphate the alkaloid with the proper quantities of hydrochloric and sulphuric acids may be used. The corresponding double salt containing hydrobromate with sulphate has an analogous formula but is not so soluble, the anhydrous salt dissolving in about three parts of water.—*Südd. Apoth. Ztg.*, 1893, 339.

The banana fruit contains cane sugar as the chief carbohydrate, *invertase* is also present, explaining the various proportions of cane sugar and invert sugar existing in infusions made at different temperatures. At 54–57° C. a five hours' digestion will not only completely invert the saccharose existing in the fruit but considerable additional quantities.—D. F. Mieran, Chemiker Ztg., 1893, 1021.

Estimation of phosphorus in medicinal preparations. The phosphorus is extracted from the remedy by triturating in a mortar with carbon disulphide (which itself must not show any color when agitated with silver nitrate solution); the extraction is continued with fresh portions of the solvent until the filtrate gives only a faint brown coloration with silver nitrate. The carbon disulphide solution (containing 20–40 mg. phosphorus) is then agitated with 10 cc. of a five per cent. silver nitrate solution, and 10 cc. water until the maximum intensity of color due to the formation of silver phosphide is reached; 20 cc. dilute intric acid are next added, the mixture thoroughly agitated, the carbon disulphide distilled off and the phosphoric acid precipitated by ammonium molybdate and converted into magnesium pyrophosphate.—Julius Toth, *Chemiker Ztg.*, 1893, 1244.

Sodium fluoride used as a preservative of foods is apparently not the harmless agent that it is claimed to be; some fish kept in a 2½ per cent. solution of sodium fluoride at 16–35° C., showed signs of decomposition at the end of two weeks; a 5 per cent. solution kept the fish in good appearance for six months. To test the question as to the physiological effect of such preserved food a portion of baked fish was eaten, the flow of saliva was notably increased at once, followed a little later by vomiting and purging, these symptoms of poisoning disappearing during 48 hours. The quantity of sodium fluoride taken in this case was estimated at 5·5 grams; one gram taken by a grown person during a meal was followed by salivation, headache and nausea. These signs of impaired digestion continued for over 48 hours.—A. G. Bloxam, *Chemiker Ztg.*, 1893, 1244.

Starch and dextrin, dry or in solution, are bleached and deodorized by simultaneous treating with chlorine and ozone, either as gases or in solutions. From the patent claim these two bleaching agents perfect each other in the bleaching of the coloring matters in the above substances. The bleached dextrin is odorless and tasteless and is used as a substitute for gum arabic.—*Chemiker Ztg.*, 1893, 1289.

Salacetol, the ester of salicylic acid and acetylcarbinol, is a synthetic product intended to replace sodium salicylate and salol, especially the latter because of the fear of poisoning by carbolic

acid which is liberated when salol is taken into the system. Salacetol, $C_6H_4(OH)COOCH_2COCH_3$, is made by heating monochloracetone $CH_2ClCOCH_3$ with sodium salicylate; it crystallizes from alcohol in fine lustrous needles, from benzin in scales; it dissolves only slightly in cold water and cold alcohol; it is more soluble in these solvents when hot; it is easily soluble in ether, carbondisulphide, chloroform, benzole, benzin, etc. It has a slightly bitter taste and melts at 71° C. The aqueous solution gives a violet color with ferric chloride; agitation with dilute solution of sodium hydrate (0.6 per cent.) saponifies it, yielding a clear solution which upon acidifying with hydrochloric acid separates approximately seventy-five per cent. salicylic acid. The dose for an adult is 2.0–3.0 gm., which administered with 30.0 castor oil has been found very successful in the treatment of diarrhœa; the dose is taken before breakfast and can be repeated for several days; 0.5 gm. is a harmless daily dose for a child one year old.—*Pharm. Ztg.*, 1893, 496.

The presence of indican in plants can be ascertained by boiling a few fragments of the plant in a test tube for about one-half minute with a dilute solution of ammonia made by diluting the official ammonia water with 49 volumes of water; after filtering and cooling the decoction is agitated with chloroform. The same operation substituting two per cent. hydrochloric acid for the diluted ammonia is made with another portion of the plant; if indican be present the chloroform layer of one or of both of these tests will be colored blue or violet. The fact that the indican of some plants is decomposed by ammonia, while in others it is not, indicates that the indican of all plants may not be identical.

The recurring statements that the following plants contain indican is declared to be erroneous: Mercurialis perennis, Melampyrum arvense, Polygonum Fagopyrum, Phytolacca decandra, Monotropa Hypopitys, Fraxinus excelsior, Coronilla Emerus and Amorpha fructicosa.

A chromogene, yielding with dilute hydrochloric a blue coloring principle which differs entirely from indigo, was found in Lathræa Squamaria; probably the same chromogene is present in Rhinanthus crista galli, Melampyrum nemorosum, M. silvaticum, Bartsia alpina, Euphrasia officinalis, Utricularia vulgaris, Galium Mullugo and Monotropa Hypopitys.—Prof. Hans Molisch, *Oesterr. Ztschr. f. Pharm.*, 1893, 523.

The detection of iodic acid in nitric acid may be speedily accomplished by the following tests: (1) 10 cc. of 30 per cent. nitric acid and a few pieces of tin are slightly warmed, allowed to stand for one minute and agitated with chloroform. (2) 5 cc. nitric acid and 0·1 gm. sodium or calcium hypophosphite are allowed to stand for several minutes before agitating with chloroform. Iodic acid is indicated in both tests by the violet coloration of the chloroform due to liberated iodine.—Pieszczek and Looff, *Apoth. Ztg*, 1893, 322 and 335.

A sample of linseed oil which caused symptoms of poisoning was found to have been obtained from seed containing about 35 per cent. impurities, the chief one present to the extent of 15 per cent. was the seed of Lolium temutentum or more exactly L. remotum.—Pieszczek, *Apotheker Ztg.*, 1893, 335.

Vasogen or vaselinum oxygenatum, a name given to mineral oils which are impregnated in a secret manner with oxygen; they are capable of emulsifying with water, and will dissolve many remedial agents like iodoform, creasote, ichthyol, menthol, pyrogallol, camphor, pyoktanin, etc., causing their ready absorption; by heat the oils lose the emulsifying properties. The solution of creasote in vasogen taken in milk is stated to be preferred by the patients to any other mode of creasote administration.—Dr. M. Dahmen, *Pharm. Ztg.*, 1893, 510.

Benzoin.—The investigations published in the Am. Journ. of Pharm., 1893, 224 and 459, are supplemented by the following additional results: The purified esters separated from Sumatra benzoin were found by saponification to contain 32·9 per cent. cinnamic acid; the mixture of alcohols combined with the salicylic acid was made up of 5·2 per cent. benzoresinol and 64·5 per cent. resinotannol. From these figures the proportions of esters would be benzoresinol cinnamate 7·4 per cent. resinotannolcinnamate 92·6 per cent. Attention is called to Sumatra benzoin as a source of cinnamic acid, allowing 15 per cent. woody impurities and several per cent. for benzoic acid at least 75 per cent. of the benzoin consist of cinnamates yielding 20–24 per cent. cinnamic acid; the remaining resinotannol, 50–60 per cent. can be easily converted into picric acid by warm concentrated nitric acid; the vanillin present to the extent of 0·1 per cent. can also be profitably extracted. The method suggested

for the preparation of cinnamic acid is as follows: The filtered ethereal solution of benzoin is agitated with a dilute solution of soda to remove the free benzoic acid and vanillin; the ether is distilled off and the pure esters saponified by boiling with solution of soda for several hours; after acidifying, the mixture is boiled and filtered, the filtrate upon cooling separating the acid which is purified by recrystallization, the resinous mass upon the filter is saponified as often as necessary to ensure complete decomposition of the esters (until the alkaline solution warmed with potassium permanganate ceases to develop the bitter almond odor).

The extraction of benzoic acid from Siam benzoin is effected by repeatedly boiling the benzoin for several hours with fresh portions of solution of soda (this must not be too concentrated) until the resin loses the gummy nature and becomes brittle and pulverulent by acidifying the boiling liquid, filtering and cooling the crude, benzoic acid is obtained and then purified by recrystallization and the acid of animal charcoal. This method is superior to the older one, in which milk of lime is used for saponifying, because of the greater yield and the rapidity of the process. Two specimens of *Palembang benzoin* contained benzoic, but no cinnamic acid; this is remarkable since this variety of benzoin comes from Sumatra. The price of this benzoin is very low and the manufacture of benzoic acid from it therefore suggests itself. Three specimens of *Penang benzoin* gave varying results: one contained benzoic acid with a very small quantity of cinnamic acid; in the second only cinnamic acid was present, while the third contained chiefly cinnamic acid with smaller quantity of benzoic acid.—F. Lüdy, *Arch. der Pharm.*, 1893, 500–513.

ABSTRACTS FROM THE FRENCH JOURNALS.

TRANSLATED FOR THE AMERICAN JOURNAL OF PHARMACY.

Estimation of Camphor.—M. Manseau gives, in *Bull. de pharm. de Bord.*, July, 1893, p. 222, several processes for the estimation of camphor, taking as a basis for them the following experiments: Place 1 or 2 gm of camphor, purified by several crystallizations from alcohol, on a small funnel, below which a tared platinum capsule is attached, and add 10 cc. of 65 per cent. ether, for dissolving the camphor and washing the funnel. Evaporate the ether, and place on a sensitive balance, although the camphor is still moist; if now

the precaution is taken to remove the camphor two or three times carefully from the sides of the capsule into the bottom, the exact weight of the camphor will be found again after standing about thirty-five minutes.

Estimation of camphor in camphorated alcohol.—Place 20 gm. of the camphorated alcohol into a flask of 150 cc. capacity and add about 100 gm. of water: the camphor precipitates; add 10 cc. of 65 per cent. ether and agitate; after several minutes decant the lower layer of the liquid by means of a siphon, place the last 50 cc. into a bromine tube, decant the ethereal layer, evaporate in the tared platinum capsule, and take the weight of the camphor thirty-five minutes after the visible evaporation of the ether.

Estimation of camphor in celluloid.—Dissolve 2 or 3 gm. of celluloid shavings in a mixture of 10 gm. strong alcohol and 35 gm. 65 per cent. ether—with constant agitation, complete solution will be effected in fifteen minutes. Add a large excess of water, when the nitrocellulose and the camphor will be precipitated separately; add 10 cc. ether and agitate; the gun-cotton powder will form a separating layer between the dissolved camphor and the supernatant ether. Filter through paper previously moistened with ether, place the filtered liquid in a bromine tube to remove the water which may have passed. Decant the ether carefully and finish the operation as in the above process.

Estimation of camphor in camphorated oil or ointment.—In this process it is necessary to first distil (about 200 cc.) the fatty body in a current of steam which carries over all of the camphor as well as some fatty acids. Saponify the fatty acids by the addition of several cc. of solution of caustic soda, and submit the whole to distillation. When 150 cc. have passed over, treat the resulting liquid with 10 cc. ether, decant the camphorated ether and proceed as in the other processes.

Assay of iodoform gauze.—Fr. Gay (*Rep. de pharm.*, July, 1893, p. 298) gives the following process: The gauze is rolled up and placed in a bath of 90 per cent. alcohol, in a Soxhlet percolator, connected with a reflux condenser and attached to a flask, into which an alcoholic solution of caustic potassa is introduced. If a ten per cent. gauze is operated upon the strength of the solution should be 5 gm. potassa to 100 cc. alcohol. The apparatus is placed

on a water bath and heated until the gauze and the alcohol are entirely decolorized. The alcoholic liquids are united and diluted with water to 250 cc., filtered, and 10 cc. of the product are neutralized with acetic acid and estimated with normal silver nitrate solution. The process can also be applied to the direct estimation of iodoform.

Scilla maritima.—In extracting the principle, which S. Wanizewski names *scillinine*, of the composition $C_{12}H_{10}O_{10}$, which Riche Rémont called scilline (see AMER. JOUR. PHARM., 1880, p. 550), the author obtained a principle of complex composition, which he purified by washing first with water then with chloroform. In each of these liquids he found a new body soluble in alcohol like scillinine; the principle soluble in water he named *scillapicrine*, that extracted from the chloroform washing *scillamarine*. He mentions also the existence of a fourth principle, which is insoluble in alcohol and in dilute alcohol, very soluble in water, very bitter and difficultly isolated.—*L'Union pharm.; Jour. de pharm. d'Anvers*, July, 1893, p. 252.

Helianthenin is the name applied by Ch. Tanret to a new principle which he isolated from Jerusalem artichoke (Helianthus tuberosus). It crystallizes in fine microscopic needles, is soluble in its own weight of cold water, very soluble in dilute alcohol; but the solubility decreases rapidly with increase of the alcoholic titre; fuses at 176°; its aqueous solution shows the rotation $\alpha_D = -23{\cdot}5°$, and the formula is $12\,(C_{12}H_{10}O_{10}){\cdot}3\,H_2O_2$. Helianthemin does not reduce Fehling's solution and is not precipitated from its aqueous solution either by baryta or by subacetate of lead.

Synanthrin, which was also separated from Jerusalem artichoke, is a white amorphous, nearly insipid substance. It is soluble in all proportions of water and dilute alcohol, less soluble in concentrated alcohol. It fuses at 170°, and shows the rotation $\alpha_D = -17°$; its composition corresponds to the formula $8\,(C_{12}H_{10}O_{10})\,H_2O_2$. It does not reduce Fehling's solution, and has the peculiar property of preventing the formation of saccharate of baryta from cane-sugar and boiling baryta, unless the proportion of sugar present is greater than 1·5 to 1 part of synanthrin.—*Jour. de pharm. et de chim.*, August, 1893, p. 107.

Asaprol, a soluble derivative of β-naphthol has been reported upon by Dujardin-Beaumetz and Stackler (*Bull. gén. de thér.*, July 30 and

Aug. 8 and 15, 1893). The authors state that asaprol is the sulphuric ether of β-naphthol in the state of the calcium salt. It is extremely soluble and in antiseptic power nearly equal to sodium salicylate, than which it is better tolerated, although an intravenous injection of a solution of asaprol is more poisonous than a similar administration of sodium salicylate solution. The adult dose is usually about 6 gm., preferably in solution, and acts as an antithermic and analgesic. It is rapidly eliminated in the urine, a test for its presence in which is the appearance of a black coloration approaching blue, upon addition of a few drops of perchloride of iron.

Steresol is the name given by Mr. Berlioz to a new preparation, which he reported to the *Académie de Médicine* (*Rép. de pharm.*, July, 1893, p. 362), and which is applicable for antisepsis of the mucous membranes and the skin. The formula is: purified shellac, 270 gm.; purified benzoin, 10 gm.; balsam tolu, 10 gm.; crystallized carbolic acid, 100 gm.; Chinese oil of cinnamon, 6 gm.; saccharin 6 gm.; and alcohol sufficient to make one liter.

Methylene blue.—Dr. C. Ferreira (*Bull. gén. de thérap.*, June, 1893, p. 488) cites a large number of cases of malarial fevers, which were treated successfully by methylene blue, and states that it is tolerated without the slighest inconvenience even by young children to whom it is administered in doses varying according to age, and that it has a manifest action on the malarial germs, causing the disappearance of the characteristic stigmata and especially of the enlargment of the liver and the spleen.

Dabrowski (Gaz. lek., 1893, through *Nouv. rem.*, June, 1893, p. 274) also testifies to the antimalarial action of the methylene blue, and that it has been well tolerated in all cases, but one, which have come to his notice. He considers that the favorable action is due not to its direct influence on the germs, but to its so modifying the constitution of the blood, as to render the multiplication of the micro-organisms impossible.

Calcium phosphate.—In the course of an article discussing the therapy and pharmacology of the calcium phosphates, P. Carles arrives at the conclusion that the normal or tribasic phosphate only should be employed. In the hydrated form, it is most easily assimilable, being most soluble in the gastric humors. It is best prepared from pulverized animal charcoal, and if it is precipitated

from at least two hundred times its weight of water by sodium carbonate it is easily held in suspension in syrup, its properties being thus preserved indefinitely.—*Bull. de pharm. de Bord.*, July, 1893, p. 207.

Citrate of caffeine, according to M. Soucheire (*Rep. de Pharm*), does not exist in aqueous solution. He prepared the salt by dissolving 1·80 gm. caffeine in 30 cc. pure chloroform, and 1·80 gm. citric acid in 15 cc. absolute alcohol, mixing the two solutions and evaporating on a water-bath; the product was a white crystalline powder, *insoluble* in chloroform, but soluble in two parts of chloroform and one part alcohol. The solution of the salt in water was evaporated on a water-bath, and the residue treated with chloroform, which took up caffeine and left citric acid as a residue, proving that the water had split up the caffeine citrate into a simple mixture of caffeine and citric acid.

Effervescent ferric lactate.—Cesaris gives the following formula in *Boll. farm.*: Ferric lactate 20 parts, citric acid 40 parts, bicarbonate of soda 80 parts, and white sugar 30 parts. The pulverized substances are mixed, and submitted to the heat of a water-bath in a porcelain capsule; then agitated constantly until a granular mass is obtained.—*Jour. de pharm. d'Anvers*, August, 1893, p. 309.

Kelene is a new name for ethyl chloride, which renders efficacious service in minor surgery.—*Jour. de pharm. d'Anvers*, July, 1893, p. 260.

Sensitive tincture of litmus is prepared according to *Boll. chim. farm.*, 1893, p. 298 (through *Rép. de pharm.*, July, 1893, p. 319) by exhausting the litmus with hot distilled water, evaporating the filtered solution, saturating with acetic acid, and again evaporating to thick extract consistence. This is now placed in a flask and 90 per cent. alcohol added. The blue coloring matter is precipitated, while the red substance and the acetic acid remain in solution. Filter; wash with alcohol; dissolve the coloring matter in hot water and again filter. The tincture should be preserved in flasks stoppered with cotton.

The filtration of pepsin solutions is facilitated by the addition of sugar of milk, which exerts merely a mechanical action and causes the liquid to remain limpid.—Wearn, in *Gior. di farm. et di chim.*, June, 1893, through *Rép. pharm.*, July, 1893, p. 320.

Concentrated solution of salicylic acid is prepared by M. Jaudon

(*Rép. de pharm.*, August, 1893, p. 341) by the following process by which he obtains a solution more concentrated than can be prepared by using simply water as a solvent. He dissolves 8 gm. of salicylic acid in 24 gm. of 90 per cent. alcohol; also 4 gm. of sodium borate in 8 gm. neutral glycerin, mixes the two solutions and makes up to 100 gm. by distilled water.

Trisulphide of arsenic, according to D. Vitali (*Boll. chim.-farm.*, through *Rép. de pharm.*, August, 1893, p. 363), is absorbed by the organism in small doses, and is transformed into arsenious acid, which is eliminated by the urine. Sulphide of arsenic, deprived of arsenic acid, has no direct influence on the organism, but favors the action of small doses of this acid.

The elimination of various medicaments after rectal injection, is reported upon by Kandidoff in a preliminary communication (*Vratch*, 1893, p. 353; *nouv. rem.*, August, 1893, p. 350), in which he arrives at the conclusion, that quinine hydrochlorate, potassium iodide, potassium bromide, sodium salicylate, arsenic and antipyrine are all eliminated by the mucous membrane of the stomach, and that this elimination, in the case of all, excepting the quinine, commences almost as soon as the elimination by the urine, and that tannin is passed neither in the stomachal contents nor in the urine.

Separation of iodine.—The following gargle was recently prescribed (*Jour. de Pharm.* d'Anvers, June, 1893, p. 212): Iodine, 25 cgm.; potassium iodine, 1 gm.; tannin, 2 gm.; potassium bromide, 10 gm.; distilled water, 50 gm.; glycerin, 50 gm.; oil of peppermint, 20 drops. In dispensing this, if the four solid substances are pulverized and mixed, then dissolved in the glycerine and water, a product is obtained in which the iodine has completely separated. This inconvenience can be avoided by mixing intimately the iodine, the iodide and the tannin, dissolving the mixture in the distilled water, which will require at least two hours, then adding successively the bromide, the glycerin and finally the oil of peppermint. By this procedure a perfectly limpid brown liquid is obtained.

Infant powders.—A writer in *gior. di farm. et di chim.*, 1893, p. 302 (through *Rép. de Pharm.*, August, 1893, p. 364), gives the following formula:

Starch, 250 gm.; precipitated calcium carbonate, 150 gm.; dried alum in very fine powder, 15 gm.; boric acid, 15 gm.; carbolic acid, 3 gm. Aromatize with oil of citron.

AMERICAN PHARMACEUTICAL ASSOCIATION.

The forty-first annual meeting of the American Pharmaceutical Association was called to order shortly after 3 P. M., on Monday, Aug. 14, 1893, in the Hall of Washington at the Art Palace, Michigan Avenue, Chicago, by Prof. J. P. Remington, President. On the platform were noticed a number of distinguished foreign honorary members and the officers of the Association. The absence of the Permanent Secretary, Prof. J. M. Maisch was soon noticed and the news of his serious illness spread very rapidly. After calling the meeting to order President Remington announced that owing to the absence of Secretary Maisch it had been found necessary to appoint a Secretary pro tem., and that he had selected Professor Whelpley, St. Louis, to fill that position. President Remington then introduced Dr. Peabody, chief of the Department of Liberal Arts of the World's Columbian Exposition, who had been chosen to welcome the Association to Chicago. After an enthusiastic reception, Dr. Peabody in welcoming the Association outlined the general object of the World's Fair from an educational point of view and gave, in detail, some information about the World's Fair Auxiliary. He called attention to the fact that for months past the halls had been filled by followers of various arts and sciences, whose deliberations had been recorded for the benefit of mankind. Of all these congresses none represented a higher or more useful branch of science than did pharmacy, for which reason he felt specially honored in having been selected to welcome representatives of such an important department. When the speaker began to refer to the rise and progress of the Western metropolis he became very eloquent. He referred to its institutions of learning, dwelling especially on those of Pharmacy. He further drew a comparison between the progress of Chicago and of pharmacy. Both, he said, had risen from humble surroundings and were steadily climbing upward and onward. In conclusion, the Doctor said: "I am here to-day to say to you all, that Chicago welcomes you most heartily to all that she has to offer, to all the privileges, to all the enjoyments connected with the Fair, to her homes and her social life—whatever you may desire to enjoy; and I trust that when you shall return to your homes and your duties, you will return feeling that Chicago, as a host, has given to you of her abundance, and that she has given you occasion to remember her with satisfaction and delight in all your future life." [Applause.]

President Remington then called on A. P. Preston, of Portsmouth, N. H., first Vice-President of the Association, to reply to Dr. Peabody on behalf of the Association. Mr. Preston cordially thanked Dr. Peabody for his eloquent words of welcome. The association, he said, came to Chicago for three purposes—first, to bring together the greatest gathering of pharmacists the country had ever seen; second, to enable its members to see the wonderful "White City," about which they heard so much; third, to enable them to see something of Western enterprise, the reports of which had penetrated even to the depths of New England, from whence he himself came. People from other parts of the country, Mr. Preston said, could not realize the effect of citizens of that region by their first pilgrimage to the West, as the latter were brought up in the idea that there could be no good outside of New England. Having seen the West and its great metropolis, the speaker observed that he felt prouder than ever of the great country of which it formed a part. In conclusion, Mr.

Preston paid the following tribute to the people of Chicago, he said that "here they have the grandest people, the most whole-souled people that can be found anywhere, and the people who are always glad to welcome their visitors. Under such auspices the meeting of '93, could not fail to be not only a grand success, but one of the most enjoyable in the annals of the Association." [Applause.] Upon conclusion of Mr. Preston's address, Henry Biroth, the local Secretary, at the request of President Remington, made a brief address of welcome, referring to the interesting programme arranged for the entertainment of the association by the local committee.

Vice-President Watson having been called to the chair, President Remington read his annual address, which was very well received. The president referred to the fact that this was the second meeting of the association in the Western Metropolis, that a number of foreign visitors were present among whom were prominent officers of European pharmaceutical societies, and that for the first time delegates from the American Medical Associations were present. He dwelled on the fact that this showed the beginning of that period which had been sought for so long when physicians and apothecaries may meet on common ground and labor together to mutual advantage. The beneficial effects resulting from the establishment of the section of Materia Medica in the American Medical Association, led the speaker to believe that the time was not far distant when a joint body or commission would be formed having for its object the securing of needed legislation to restrict the practice of both professions to those only, qualified to perform such responsible duties. The chairman further paid tribute to the energies of the chairman of the committee on revision of the Pharmacopœia, Dr. Chas. Rice, who had sent the first copy to the meeting for inspection. President Remington pointed out the changes which had been introduced into the Pharmacopœia, one of the most striking being the adoption of the metric system in expressing "solids by weight," and "liquids by measure." Another change is noticed in a definite time being set when the Pharmacopœia became official, January 1, 1894. Standardization was restricted to three drugs, opium, cinchona and nux vomica. The changes in nomenclature were noticed, especially the dropping of "of" in the common names of chemicals, and the creation of a new class called "emulsa."

The president referred also to the activity of the preparation of synthetical compounds. These compounds, when they could not be produced otherwise than under a patented process, or if protected by proprietary right, were excluded from the Pharmacopœia. On motion of Mr. Kirchgasser, the president's address was referred to a committee of three, and the chair appointed Messrs. C. L. Diehl, H. R. Slack and H. M. Whitney. Mr. Kennedy, Secretary of the council, read the council's report on membership. On motion of Mr. Zwick, the chair was requested to name a committee of three to frame a resolution expressing the deep sympathy of the association with Permanent Secretary John M. Maisch in his present illness, and also the deep regret experienced in losing his valuable services. The chair appointed Messrs. Hoffman, Zwick and Ebert.

President Remington then introduced Mr. Michael Carteighe, President of the Pharmaceutical Society of Great Britain. Mr. Carteighe gave expression to his disappointment in the absence of Prof. Maisch. He said he had special reasons for this as he had a surprise in store for him. He had in his possession a medal, the Hanbury Medal, which had been awarded to Prof. Maisch.

He furthermore drew attention to the fact that pharmacy as carried on here and in England bore a great similarity, and differed materially from the way it was carried on, on the continent of Europe, where it had the protection of the government.

Mr. Lord, delegate from the National Wholesale Drug Association, addressed the association, stating that the association which he represented was in hearty sympathy with the aims of the A. P. A., and wishes success to the labors of the association in its commercial section. The secretary then read the following reports by title: Committee of Arrangements, Henry Biroth; delegation to visit the American Medical Association, by Jas. M. Good; treasurer's report, by S. A. D. Sheppard. Professor Fennel moved that the American Pharmaceutical Association extend to Dr. Rice and his associates on the committee its thanks for the presentation of the U. S. Pharmacopœia to American pharmacists, and that the members pledge themselves to make the U. S. Pharmacopœia the standard work from Maine to California.

After a recess of five minutes, the following nominating committee was appointed:

Alabama—P. C. Candidus, J. J. McAfee. Arkansas—W. L. Dewoody, D. E. Shandel. Colorado—J. W. Turrrel, C. M. Ford. District of Columbia—W. S. Thompson, S. L. Hilton. Florida—S. P. Watson, C. C. Harris. Georgia—Paul Penniston, W. R. Cornell. Indiana—L. Eliel, G. H. Sloan. Illinois—C. S. N. Hallberg, H. W. Martin. Iowa—Rosa Upson, G. H. Schafer. Kansas—Mrs. M. O. Miner, L. E. Sayre. Kentucky—G. A. Zwick, W. H. Averill. Louisiana—A. L. Metz, C. L. Keppler. Maryland—L. Dohme, Wm. Simon. Massachusetts—C. H. Price, F. H. Butler. Michigan—J. Vernor, G. Gundrum. Mississippi—J. C. Means. Missouri—J. M. Good, H. M. Pettit. New Hampshire—A. C. Preston. New York—L. F. Stevens, J. Pfeiffer. North Carolina R. Simpson, Mr. Charis. Ohio—L. C. Hopp, G. L. Hechler. Oregon—G. C. Blakely. Pennsylvania—C. S. Heinitsch, Wm. McIntyre. Tennessee—A. A. Yeager, J. O. Burger. Virginia—W. E. Church. Wisconsin—E. Kremers. Canada—S. Lachance, Quebec. From the association-at-large—Messrs. Patton, Ebert, Whelpley, Whitney and Trimble.

The president appointed the committee on time and place of next meeting—Messrs. Sheppard, Ford, Whelpley, Eliel and Patterson. At the request of President Remington, Prof. Good reported, on behalf of the delegates, to visit the American Medical Association. Among other things, the speaker said that the resolution passed by the American Medical Association that the U. S. Pharmacopœia shall be adopted by the physicians in prescribing and pharmacists in compounding, and that both it and the National Formulary be made text-books in the medical and pharmaceutical schools, originated in the section of Materia Medica.

On motion, the report was received and referred.

The convention here, on motion, adjourned to meet on Tuesday, at 9 A.M.

Second Session.—The session was called to order by President Remington, in Hall XXIV, of the Art Palace, and the proceeding opened by the presentation of a report on membership by Mr. Kennedy; 113 applications for membership had been received and had been recommended for favorable consideration. On motion, the applicants were invited to become members of the association.

Professor Good, on behalf of the committee on nominations, presented the following report:

For president, Edward L. Patch, of Boston; first vice-president, E. O. Daly; second vice-president, W. Rogers, Millersville, Ky.; third vice-president, Charles Caspari, Baltimore, Md.; treasurer, S. A. D. Sheppard; permanent secretary, John M. Maisch; reporter on progress of pharmacy, Henry Kraemer, New York; members of the council; C. L. Diehl, C. M. Ford and Wm. C. Alpers. A ballot for the election of president was then taken, Messrs. Overstreet and Hamilton acting as tellers. The ballot resulted in the unanimous election of Prof. Patch. On motion, the secretary was directed to cast an affirmative ballot for the other nominees, which was done, and their election announced by the chair.

Mr. Sheppard, on behalf of the committee of time and place of next meeting, reported that three places had been presented for consideration, Asheville, N. C., Hot Springs, Ark., and Denver, Col. After consideration the committee decided on Hot Springs, and the time fixed for first Monday in June, 1894. After an excited discussion Asheville was substituted, and Mr. W. G. Smith, of Asheville, selected as local secretary. Prof. C. L. Diehl reported on behalf of the Committee on National Formulary. Dr. Hoffman reported on behalf of the committee on resolutions to Prof. Maisch, the following: Professor John M. Maisch—The American Pharmaceutical Association assembled conveys to you the heartiest greeting and the sympathy of its members in your sufferings. They keenly feel and regret your absence, and trust that you may find consolation in the knowledge that their love and esteem are with you, and that your eminent and enduring services for the promotion of the association, and for the elevation and advancement of pharmacy will ever remain an ornament in the annals of American pharmacy." By a rising vote the resolution was unanimously adopted.

Mr. Kennedy reported that since the meeting of 1892, more new members had entered the association than ever before, namely 210.

Secretary Whelpley read a letter from Dr. Rice to the association, explaining his absence and asking for suggestions for further improvement in the work on the Pharmacopœia.

Henry Kraemer, reporter on progress of pharmacy, made a brief statement of the work done by him during the year, and, on motion, the report was accepted and referred for publication.

A recommendation was made in the above report that a bureau of information in matters pharmaceutical be established by the association, caused some discussion. The matter was finally settled by referring the recommendation to the council for consideration.

Prof. Fennel presented the report of the committee on credentials. The report of the treasurer, S. A. D. Sheppard, was next presented and showed an encouraging state of affairs, notwithstanding the financial disasters and the silver question.

On motion of Prof. Oldberg, the president was asked to send greetings to the British Pharmaceutical Conference, then in session at Nottingham, England.

The next report was that of the committee on prize essays, submitted by Mr. Kennedy. Among other things it contained the recommendation that the resolution passed in 1887 be enforced which provided that $150 be awarded to

the writers of the three most valuable papers presented to the scientific section, and further that the recipient of the Ebert prize should not be debarred from receiving one of the Association prizes.

Prof. Whelpley presented the report of the committee on revision of the pharmacopœia, saying that too short a space of time since the publication had elapsed to make any acceptable criticisms or laudations of the work.

Prof. Oldberg made a short statement concerning the work of the committee on the International Pharmaceutical Congress.

Prof. Fennel presented a resolution appropriating $1,000 placed at the disposal of the seventh International Pharmaceutical Congress for the compilation, publication and distribution of an international pharmacopœia. After considerable discussion the resolution was adopted.

Invitations were received from Armour & Co. to visit their packing houses; from Merck & Co., offering the hospitalities of the Merck Building at the Exposition, and from the Illinois College of Pharmacy, to inspect their new building and laboratories.

The Association then adjourned till 9 A.M., Saturday, August 19.

Section of scientific papers.—The first session of the section was called to order by Prof. C. T. P. Fennel, in Hall XXII, of the Art Palace, on Tuesday, at 3 P.M., Prof. F. G. Ryan acting as secretary.

The proceedings were opened by reading the chairman's address, which referred to the progress made by pharmacy within the last year, calling special attention to American pharmacy as shown by the displays at the World's Fair. He also briefly referred to the publication of the pharmacopœia. On motion of Prof. Whelpley, the address was received and referred.

The report of the committee on the ephemeral publication of the new remedies was called for. Prof. Hallberg, on behalf of the committee, stated that not until the publication of the Proceedings, was he aware of the existence of the committee and that on corresponding with the other members they decided to let the matter rest on account of the short time intervening.

Nominations for the ensuing year being in order, Prof. Whelpley nominated Prof. L. E. Sayre, who in turn nominated C. M. Ford, of Denver, for the position of Secretary.

The reading of papers was opened by Prof. Sayre with an interesting paper on *Composition of Taraxacum root at various seasons of the year* and Prof. Patch, *Laboratory Notes.* The next paper as by Prof. Hallberg, on *Beef Extracts, their Manufacture, Composition and Therapeutic Effects* which created quite a discussion on the advisability of using names in place of number as was the practice of the association heretofore to designate the different samples. A motion of Prof. Good requested the writer to use number was at last carried. Mr. H. S. Wellcome, of London, read the next paper, entitled *On an Improved Shape for Suppositories and Bougies as Vehicles for Medication* (see A. J. P., p. 433). After this came *Atomic Weights*, by Dr. Gustavus Hinrichs, and *Bougies*, by Nicholas Pritzker.

The section then adjourned until 8 P. M.

Second Session.—The section was called to order at 8 P. M., and the election of officers for the ensuing year was held. On motion of Prof. A. B. Stevens, the Secretary was instructed to cast ballots for the unanimous election of the nominees, Messrs. Sayre and Ford.

The reading of papers was resumed, the following being presented: *On the Preparation of Oak Tannins with Reference to the Special Use of Acetone as a Solvent*, by Prof. Henry Trimble (see A. J. P., p. 435). *Caulophylline (from the Root of Caulophyllum Thalictroides)*, by Prof. J. U. Lloyd. *The Value of Titration with Volumetric Acid Solutions as a Means of Assaying Alkaloidal Drugs and Galenical Preparations*, by Prof. Chas. Caspari, Jr., and Alfred Dohme. *Canadian Potash*, by Professor Reid, of Montreal. In the discussion which followed Prof. J. U. Lloyd called attention to the fact that the Canadian Potash was of better quality than that of American manufacture.

Then followed *Change of Volume when Liquids of Different Densities are Mixed*, by Wilbur S. Scoville; *The Value of the Pharmacopœial requirements for Oil of Cloves*, by Prof. C. T. P. Fennel; *Refractometers and their Uses*, by Prof. W. F. Edwards; *A Microscopical and Analytical Study of Coca Leaves*, by Dr. A. R. L. Dohme; *Commercial Varieties of Opium*, by the same; *Hydrastis Canadensis*, by F. A. Thompson; *Contribution to the Literature of Strychnine Determinations*, by J. B. Nagelvoort; *Gelsemium Sempervirens*, by Chas. O. Hill; *Colocynth*, by Geo. Wagner; *Investigation of Menthol Derivatives*, by Prof. E. Kremers; *An Aseptic Irrigating Tube*, by Adolph Levy.

The installation of the new officers was next in order, which took place at about 11 o'clock, when long speeches were out of the question.

In terminating the proceedings the chairman referred to the good attendance, notwithstanding the many rival attractions and also to the papers presented, which were of unusually high character.

The section then adjourned to meet in Asheville in September, 1894.

Section of Pharmaceutical Education and Legislation.—This section was called to order on Thursday, August 17, at 9 A.M., by Dr. R. C. Eccles.

In his annual address, the chairman dwelt especially on the legislation in the different states, referring to the good and bad points of the various enactments. He invited the State associations, whose duties, he said, it was to examine their laws thoroughly, to express their opinions on pharmacy laws, so that the matter could be brought up before the association at its next meeting. On motion, the address was referred to a committee of three, consisting of Messrs. Sayre, Mittlebach and Caspari.

The paper which followed was *History of American Pharmacy*, by S. M. Colcord. A remark of Alphonse Major, as to the rise of saloonkeepers, gave rise to a heated discussion, ending with the announcement that at proper time charges would be brought by Mr. Eliel against Mr. Major for conduct unbecoming a member. Mr. Major replied that his remark was meant as a joke, but the chair declared him out of order.

The nomination of officers being next in order, Dr. Eccles was again nominated, as was also Mr. L. C. Hogan.

The next paper read treated of: *Legislation and Boards of Pharmacy, Education and Colleges of Pharmacy*, by Prof. E. L. Patch. As a result of this paper, motion was carried to appoint a committee of three to suggest a line of policy to be devised by this Section with reference to admitting graduates of pharmacy without examination by boards of pharmacy. The resolution offered was to the effect that it was best that the State boards did not recognize the diplomas.

The next paper was offered by the Secretary of the Lombardini Pharmaceuti-

cal Association of Milan, Italy, translated by Dr. Chas. Rice, giving an account of present status of pharmacy in Italy. The paper was on motion referred to the International Congress.

The relation between gas volumes and molecular weights, by Prof. Wm. Simon, was illustrated with some models of ingenious construction which he had invented for lecture work.

Why do so many pharmacists forsake their profession for the study and practice of medicine? by Henry N. Slack, was next read.

Mr. Michael Carteighe next compared the pharmaceutical legislation with that of the United States. Among other things he thought the English practice was a good one to have examinations by the Pharmaceutical Society and the government to be represented by members of the Privy Council.

Following Mr. Carteighe the following papers were presented: *Should candidates for graduation in pharmacy be able to make all preparations, a process for which is given in the United States Pharmacopœia?* by Prof. L. E. Sayre. *What are the benefits and what, if any, are the losses to the community and to pharmacists by reason of the existence of pharmacy laws?* by H. M. Whitney, and another answer to the above question by S. A. D. Sheppard. *Are pharmacy laws a benefit to pharmacists?* by John H. Manning. A paper with resolution, which created considerable discussion and was later referred to a committee of three, Messrs. Sheppard, Simon and Ford, was: *What should be the requirements of graduation in American colleges of pharmacy?* by Prof. Hallberg.

Prof. Sayre offered a resolution referring to certain statements in the chairman's address in regard to ill-advised legislation.

The section then adjourned until the afternoon.

Second Session.—The section was called to order at 3 P.M., and the proceedings opened by the Secretary's report, dealing especially with the prosecutions under the pharmacy laws.

A paper by Dr. Bowker on *Legislation in Pharmacy* was presented but rejected by the section.

Draft of a proposed bill regulating the sale of patent medicines, by Prof. Hallberg was referred for publication. The following papers were then read: *Would it be a gain or loss to pharmacists to compel apprentices to pass a board of pharmacy examination on their general education before permitting them to begin work in a drug store?* by Rosa Upson. Two papers by W. Bodemann, with reference to some special lines of pharmaceutical legislation. *More chemistry needed—a plea for the extension of this branch of a pharmacist's training*, by A. R. L. Dohme. *Should any candidate be permitted to graduate in pharmacy before he is able to apply the tests and assays of the United States Pharmacopœia*, by Prof. Simon. A paper by C. M. Troppmann, *Danger of our Prescription Business*, was referred to the Section of Commercial Interests.

The Committee appointed at the morning session to consider Prof. Hallberg's resolution asked for time until the next annual meeting.

Mr. Ebert made a few remarks regarding legistation, asking among other things for registration of proprietors only. Quite a number of members participated in the discussion which followed.

Change the Laws, by H. Bodemann, referred especially to the present trademark laws.

The next business in order was the election of officers, the nominees being elected.

The section then adjourned for the year.

Section of Commercial Interest.—The section was called to order on Thursday, Aug. 17, at 8 P.M., by Chairman W. H. Torbert. Mrs. M. O. Miner, of Iowa, acting as secretary. The chairman's address dealt principally with the A. P. A. plan for the protection of rates on proprietary articles. The chair remarked that dealers who were cutters in self-defence had been supplied by the wholesale trade.

After considerable discussion a resolution by W. C. Alpers in regard to druggists to recommending preparations of their own in place of proprietaries called forth a lengthy discussion, which ended in the resolution being laid on the table.

Another resolution, by S. A. D. Sheppard, indorsing the action of the delegates in leaving the execution of the A. P. A. plan in the hands of the Interstate League was adopted.

Nomination and election of officers being in order, Mr. Rogers, of Louisiana, and Mr. T. N. Jamieson, of Chicago, were elected chairman and secretary, respectively.

The section then adjonrned for the year.

Final general session.—At 10 A.M., Saturday, Aug. 19, the final session of the American Pharmaceutical Association was called to order in Hall XXIV, of the Art Palace. Mr. Whitney, on behalf of the committee on the president's address, presented its report which was received and adopted. Pursuant to an invitation from the secretary of the Pan-American Medical Congress, convening in Washington in September, the Chair appointed Messrs. W. S. Thompson, Charles Caspari and F. G. Ryan as delegates.

The chair then appointed the Committee on Prize Essays, consisting of Prof. Good, W. J. M. Gordon and J. H. Stein.

On motion of Prof. Whelpley, the Chair was instructed to appoint a special committee of membership consisting of one from each State and Territory and from District of Columbia, Nova Scotia, and Quebec, for the purpose of soliciting new members and to report the same to the Committe on Membership.

Mr. Eliel then brought the charges against Mr. Major, the matter after discussion being referred to the council with power to act.

Prof. Whelpley moved a vote of thanks to the druggists of Chicago and the members of the Illinois Pharmaceutical Association for the entertainment and courtesies shown.

Prof. Remington then introduced Dr. Woodbury, the accredited delegate from the American Medical Association. Dr. Woodbury dwelled especially on the relation between druggist and physician, and in closing reference to Prof. Remington's excellent work toward establishing the Section of Materia Medica in the American Medical Association.

The installation of the new officers was now in order, so the chair appointed Messrs. Simon and Gordon to conduct them to the platform. The officers all replied in words of thanks for the honor shown them. The only absent officer was Prof. Maisch, from whom a reply to the resolutions was read.

On motion of Mr. Zwick, the retiring officers were tendered the thanks of the Association, and on motion of Prof. Remington a vote of thanks was

tendered to Mr. Henry Biroth, and the local committee for their kind and laborious services toward entertaining visitors and making the Chicago meeting a grand success and one memorable in the history of the Association. The Association then adjourned to meet in Asheville the first Monday in September, 1894.

In the way of entertainment a number of things were offered. Wednesday and Friday had been set aside for visiting the Fair. On Tuesday evening a reception was tendered by the local committee at the Casino, on the Fair grounds, where several hours were enjoyably spent. On the evening of Wednesday, August 16, a banquet at the Fair grounds, took place when the following toasts were responded to. The American Pharmaceutical Association, Prof. J. P. Remington; The International Pharmaceutical Congress, Michael Cartleighe; The Illinois Pharmaceutical Association, Dr. H. Lee Hatch; The Pharmaceutical Schools, Prof. A. B. Prescott; The World's Columbian Exposition, Dr. S. H. Peabody; The Pharmaceutical Press, Dr. H. M. Whelpley; The City of Chicago, Geo. P. Engelhard; The Ladies, Prof. C. S. N. Hallberg. Prof. Remington acted as toastmaster. A Lake excursion which had been arranged to follow the final adjournment, had to be abandoned owing, to the condition of the Lake. The Association went in tally-ho coaches to Lincoln Park where a luncheon and reception had been planned by the local committee.

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

Philadelphia College of Pharmacy.—The Board of Trustees of the Philadelphia College of Pharmacy have called Professor Edson S. Bastin, A.M., F.R.M.S., to the Chair of Materia Medica and Botany, made vacant by the death of Professor John M. Maisch. Prof. Bastin has accepted this call, and will conduct the coming course of lectures in the College.

EDITORIAL.

In this number our readers will find a short résumé of the work of the meeting of the American Pharmaceutical Association.

Through the sickness of Prof. John M. Maisch we have had no one at the meetings to obtain a report of the same in time for our last issue. We therefore offer it this month. The only thing we could do under the circumstances was to cull from different sources, but we endeavored to give as full a résumé as possible.

The following letter explains itself:

DEAR SIR:—I beg to ask you the favor kindly to insert the following publication in the next issue of your esteemed paper:

"It is well known that the next, the VIII International Congress of Hygiene and Demography, will be held at Budapest in September of next year, under the high patronage of His Imprl. and Royal Majesty. The preliminary work is already progressing very briskly. The papers of subject for the 19th hygienic and 7th demographic sections being already selected, the referees for these papers have also been asked to receive them, and many of these gentlemen have already sent in their acceptance of these duties. The series of further

questions, will be arranged according to sections about the beginning of next month, and will then be sent out to the foreign scientists, in order that the preliminary works for the scientific part of the Congress may as nearly as possible be completed before the beginning of autumn.

"The Executive Committee especially desires to realize as far as possible the decisions of the London Congress. Special international committees have been organized with regard to several decisions accepted at the London Congress; they are at present occupied with the solution of the various questions thus mooted.

"To England it will be of some special interest to know that one important decision that was accepted at the instigation of the London Congress. This decision refers to the organization of a separate section for tropical countries. The president of this special section will be Dr. Theodor Duka, and the two secretaries will be Dr. Isambard Owen and S. Digby, Esq. These gentlemen kindly consented to accept these posts, and are now engaged arranging the program of this section.

"The honor presidents of the several sections will be elected by the Executive Committee as soon as the names of those foreign celebrities shall be known who will take part in the Congress.

"After the termination of the Congress several excursions will be arranged, amongst which one will be to the Irongate on the lower Danube, to Belgrad and to Constantinople, which doubtless will be of some attraction."

I remain, dear sir, Yours obediently,

PROF. MÜLLER, M.D., *Chief Secretary.*

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

The Pharmacopœia of the United States of America.—Seventh decennial revision. 1890. By authority of the National Convention for revising the Pharmacopœia, held at Washington, A. D. 1890. Official after January 1, 1894. Published by the Committee of Revison. 1893.

This long-looked for work has appeared and is now ready for distribution. By this revision 87 new articles have been added and 90 dropped, being less than in the sixth revision, when it was 259 and 224, respectively. The titles have been changed in a number of instances—Latin titles 56 and English titles 227. The large number of changes in the latter instances, as compared with 1880, is due to the adoption of the modern nomenclature. In regard to preparations, we find the first class of 1880, abstracts, entirely dropped, in the fluid extracts there is an increase of 10, and in solid extracts an increase of 9 over the last revision. Two elixirs are now official, the old simple elixir being replaced by an aromatic elixir, and elixir of phosphorus having been added. The tinctures have been increased by two. To one tincture a method of assay has been added. Another change, that in the preparation of the aromatic waters, has been made; these are now prepared with phosphate of calcium in place of cotton. Among other changes to be noted are the addition of a new class of preparations, "Emulsa," under which heading are placed 4 mixtures of the former revision. Suppositories are represented by one, that of glycerin, and glycerites by 4. The newer remedies and drugs are represented by acetanilidum, adeps

lanæ hydrosus, cinnamomum saigonicum, convallaria, eucalyptol, hydrastininæ hydrochloras, hyoscinæ hydrobromas, menthol, naphthalinum, physostigminæ sulphas, pyrogallol, resorcinum, salol, sparteinæ sulphas, strontium salts, strophanthus, Terebenum and terpini hydras. Another change which strikes one more forcibly than all others is the discarding of parts by weight and the substitution of the metric system to express the idea of *liquids by measures* and *solids by weight.* The printing and further make-up of the book is good. A beginning of a thorough review will be found on another page.

Proceedings of State Pharmaceutical Associations.

The following issues have been recently received:

Alabama.—Twelfth annual meeting held in Birmingham, May 9 and 10. 1893. See July number, p. 367, of this Journal; pp. 51, 8. P. C. Candidus, Mobile, Secretary.

Connecticut.—Seventeenth annual meeting, held in New Haven, February 7 and 8, 1893. A part of the book is taken up by the laws of Connecticut pertaining to pharmacists. Original papers published are: Sulpho-salicylic acid as a urine albumen test, by George McGuire. Pill excipient for general use, by N. A. Upham, besides several other papers. Next meeting in Hartford, February 6 and 7, 1894, pp. 118. Frederic Wilcox, Wichita, Secretary.

Kansas.—Fourteenth annual meeting, held in Wichita, May 23, 24 and 25, 1893. See August number, p. 412, of this Journal, pp. 154. Mrs. M. O. Miner, Hiawatha, Secretary.

Mississippi.—Second annual meeting, held at Jackson, May 9 and 10, 1893. See August number, p. 412, of this Journal, pp. 89. Carson Lemly, Jackson, Secretary.

Pennsylvania.—Sixteenth annual meeting, held in the Eureka Springs Hotel, Saegertown, June 13, 14 and 15, 1893. See August number, p. 412, of this Journal, pp. 130. Jacob A. Miller, Harrisburg, Secretary.

New Jersey.—Twenty-third annual meeting, held at Atlantic City, May 24 and 25, 1893. (See p. 412 of this Journal.)

Tennessee.—Eighth annual meeting, held in Nashville, May 17 and 18, 1893. See August number, p. 414, of this Journal, pp. 39. Will Vickers, Murfreesboro, Secretary.

Illinois.—Thirteenth annual meeting, held at Springfield, June 7 and 8, 1892. Accompanying this is the annual report of the State Board of Pharmacy, containing a list of registered pharmacists and assistant pharmacists for 1892.

Quebec.—Twenty-third annual meeting, held at Montreal, June 13, 1893.

Texas.—Fourteenth annual meeting, held at Dallas, Tex., May 9, 10 and 11, 1893. (See p. 414 of this Journal.)

Beitrag zur Wirkung des Trionals.—Von Dr. Koppers, Separat-Abdruck, aus der R. Internationalen Klinischen Rundschau, No. 29 und 30. 1893.

Contribution on the action of Trional. By Dr. Koppers. Reprint from Intern. Klin. Rundschau, No. 29 and 33980.

Notes taken in the private practice of Dr. Seifert, of Würzburg, and of the author.

Therapeutical Superstition. By Geo. T. Welch, M.D., ex-president of N. J. State Medical Association.

A reprint from the Transactions of the Medical Society of New Jersey, 1893.